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DEPARTMENT OF HEALTH FOR SCOTLAND

POLIOMYELITIS

A Survey of the Outbreak in Scotland in 1947

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FOREWORD

While poliomyelitis has been a notifiable disease in Scotland since 1924, until two years ago its incidence has never reached a degree of prevalence which could be considered epidemic. The visitation of 1947, however, can be so classified ; it was our worst experience of the problems which that disease could create in a community. Unfortunately, information on its control was meagre, for despite intensive research effort in those countries which had hitherto experienced severe outbreaks, little advance had been made in solving the many epidemiological riddles of poliomyelitis. So limited in fact is our knowledge of how to control the disease, that every possible avenue of enquiry must be explored to find the answers. For this reason the opportunity has been taken to examine some aspects of our 1947 epidemic. This report, then, is the first comprehensive study of the epidemiology of poliomyelitis to be made on a national scale in Scotland.

The information collected about the cases which occurred in 1947 has enabled a close study to be made of age and sex incidence and of distribution of the cases in space and time, all of which constitute the primary data in an epidemiological study. But it has also permitted an accurate classification of the cases according to severity of the disease and the degree of paralysis. That poliomyelitis is somewhat different in its epidemiology from most of our common infectious diseases is well recognised. It seems to occur in countries where the standards of living are relatively high and the report draws attention to other peculiarities such as its relation to housing. The disease seems to be rather associated with better than with bad housing ; and so, too, is the severity of the resulting paralysis. It seems to attack small family groups rather than the large families which are more likely to be overcrowded ; no evidence of correlation with definable degrees of sanitation or insanitation could be produced.

The disease proved to be serious, carrying a fatality rate of 8·87 per cent. Moreover, it becomes of special medical and social importance by reason of the paralysis which follows the acute stage ; of 1,376 accepted cases, 1,047 sustained paralysis in some degree. Each case of paralysis involves careful supervision and often prolonged stay in hospital measured in terms of months ; thus the burden placed upon orthopædic hospitals in the treatment of these cases is obviously very great. Special action had to be taken by the hospital authorities to handle these cases which were additional to their normal work. The spirit of co-operation shown by all the hospitals concerned was most commendable and it played a great part in mitigating the effects of paralysis. There were 96 patients who required treatment in mechanical respirators ; 62 of these did not recover.

On a note of reassurance, however, it must be emphasised that even although poliomyelitis is unpredictable and although by reason of the disabilities it may cause it arouses great uneasiness in the public mind, the general incidence in the total population is relatively small. Even in this so-called epidemic year the rate of incidence was only 0·268 per 1,000 of population ; this, compared with the much higher rates for many other diseases such as pneumonia, whooping cough or tuberculosis, cannot be termed alarming.

This investigation was planned and the report was prepared and written by Dr Ian N. Sutherland, a Senior Medical Officer of this Department. It is a model of careful recording and accurate and detailed statistical work and it furnishes an invaluable record of the behaviour of poliomyelitis in our first recorded epidemic. Should, unfortunately, a similar occurrence take place in the future—and we are still without the information necessary to insure ourselves against such a possibility—the observations in this report will provide useful data for those who have to deal with the contingency. It is from the accumulation of such studies as this one, and from the workers in that new branch of microbiology called virology that the means of prevention and of specific treatment will emerge.

Andrew Davidson.

Chief Medical Officer,
Department of Health for Scotland.

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POLIOMYELITIS

A Survey of the Outbreak in Scotland in 1947

1. PRELIMINARY

POLIOMYELITIS has not been a common disease in Scotland. The recorded history of notifications in this country dates only from 1925, though there is knowledge of slight prevalence of the disease for many years before that. The history of the disease, as revealed by notifications, has already been summarised[1] and only the main results of the earlier study need be reproduced.

Polio-encephalitis has never been separately notifiable in Scotland, so all notification figures refer to the total cases notified, irrespective of the site of the mainly affected parts of the nervous system. There was no significant trend, either up or down, between 1925 and 1946. The mean annual notifications were 87·5 and the median 48·5. The annual range was from 24 (in 1935) to 275 (in 1928). Six peaks of incidence, irregularly distributed, occurred in 22 years.

Total notifications[2] in Large Burghs exceeded the total in the rest of Scotland. Years of low prevalence (i.e. below median) provided an unusual feature, the 150 notifications in Large Burghs being less than the 180 in the rest of Scotland. This difference was more than reversed in years of high prevalence (i.e. above median). In years of low prevalence the Large Burghs and the rest of Scotland had similar age incidences of the disease, with maxima in the age group 1–4. The maxima were accentuated in years of high prevalence, especially in Large Burghs where in fact the age group 1–4 provided 57·1 per cent. of all cases notified in Large Burghs in these years.

Since 1943, notifications have been more finely divided by age and differentiated by sex. The figures for this and later years, while small, showed that in one year of high prevalence (1944) there was a significant excess of male cases notified at ages under 15, which was contrasted with a small (not significant) excess of females in the three other years available for comparison, all of them of low prevalence.

Seasonal incidence, judged by the medians of each of the thirteen four-weekly periods in the years 1931–39, was of a disease with a flat peak from the eighth to the eleventh four-weekly period in the " normal " year.

Data on deaths from poliomyelitis have been abstracted from the Annual Reports of the Registrar-General (Scotland) for the period 1925–46. The mean number of deaths per year was 17·1, the median 16. There had been a slight, insignificant downward trend, in time, both of male and of female deaths. Nominal fatality rates at all ages and in certain age groups have been calculated ; the disease, while not a major cause of death, seemed to have a high fatality rate especially in infants and in those over 15.

Reference to Table 1 reveals that there was an excess of male deaths. The proportion of male deaths was slightly, but not significantly, less in the ten years above median than it was in other years. The age distribution of deaths has been compared between the sexes, and no significant difference found : i.e.

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[1] *Health Bulletin* (C.M.O. Department of Health for Scotland), (1948), 6, 4.

[2] In the period 1925–46, excluding 1929 and 1940 because of slight deficiencies in information on age groups.

though more males died than females, there was no significant selection of any specific age group in either sex, compared with the other.

The imminence of an outbreak in Scotland in 1947 was deduced from rising figures of notifications in England and Wales. The Scottish outbreak did not follow on that further south, but with the smaller population of Scotland it took longer to reveal itself. The notification rate was indeed slightly higher in Scotland than in England and Wales, and for a few weeks during the waxing of the outbreak the rate of increase of weekly notifications was unduly high in Scotland. Taken as a whole, however, the Scottish outbreak was part of an outbreak covering the United Kingdom. It was compounded of local peaks which were not all reached at the same time; Glasgow and Ayrshire led the way; other areas had their peaks a few weeks later. The overlap was so considerable, and the larger peaks so near each other, that the curve for Scotland was smooth.

In the previous survey it was possible to include cases notified up to 15th November, 1947, as special arrangements had been made for daily reporting of cases, with information of age and sex, by Medical Officers of Health to the Department. It was then found that the number of notifications in Large Burghs, in the twenty weeks studied, exceeded that in the rest of Scotland: this was consistent with previous experience. The sex incidence was predominantly in males, with some curious irregularities such as an excess of male notifications in earlier age groups, and a deficiency at ages over 25, in the second ten weeks of the period. The peak of age incidence remained in the age group 1–4, being sharper in the first ten weeks than in the second half of the period. The notifications had a higher mean age than those of preceding years, this higher figure being slightly more obvious in Counties than in Cities.

It was thought that some more detailed information on each notified case would enable a full account of the outbreak to be compiled; Medical Officers of Health in Scotland were asked to send a summary card for each notified case in the period 1st June, 1947 to 3rd January, 1948. The prompt agreement of all Medical Officers of Health to do so, and the willing work which they, their staffs and associates performed in completing the summaries, are acknowledged and highly appreciated. The summary card is reproduced as Appendix I to this survey. The data on each card were coded and transferred to punched cards for tabulation by the Statistical Section of the Department.

2. THE POPULATION SURVEYED

(*a*) **Cases.** In all, 2,002 cards were included in the survey. This total compares with 1,584 notified cases included in the first survey covering twenty weeks in the second half of 1947. Of the 2,002 cases, 1,376 had been accepted as cases of poliomyelitis. (This total does not necessarily tally absolutely with other published figures of notifications in the second half of 1947, as the data underwent continual refinement.) The residual 626 notifications were of patients whose final diagnosis was not poliomyelitis.

(*b*) **General.** The basic information is given in Tables 4–6. These tables contain finer age grouping than has been necessary in later tables. It is clear from the tables that poliomyelitis remained in 1947, in Scotland, predominantly an "infantile" disease.

(*c*) **Incidence rates.** Population estimates for mid-1947 having been kindly provided by the Registrar-General (Scotland), incidence rates shown in Table 2 have been calculated. At ages below that of school entry, the incidence rate had a peak at 1 year, with relative sparing of babies of lesser age. The downward progression of incidence with increasing age was smooth.

The completeness of the data in the survey may be mentioned here. It is known that the 2,002 case records in this survey included all notified cases in the most populous areas and those with high incidences. It is also known that every notified case in every area was not included. There was practically no selection of notified cases for entry in the summary cards, the exception being an urban area with 0·8 per cent. of the Scottish population, for which cards were not returned for cases finally diagnosed as "not poliomyelitis." It can be stated that this omission did not seriously affect the characteristic of the "not poliomyelitis" group.

(*d*) **Deaths.** Of the 2,002 notified cases, 162 (8·09 per cent.) were fatal. Fatality rates will be discussed in detail in later sections. Here it may suffice to state that figures of deaths in a special survey of this nature do not necessarily tally completely with the official figures to be published in the Annual Report of the Registrar-General (Scotland) for 1947. According to the Quarterly Returns of the Registrar-General, 123 deaths were certified as from poliomyelitis in Scotland in the second half of 1947 ; the figure is almost identical with that given in the present survey for accepted cases (i.e. 122).

3. TYPES OF ILLNESS

(*a*) **General.** The five types of illness included in the survey are given in section 13 (Final Diagnosis) of Appendix I. It was expected that types ii and iii would be relatively rare, and in fact they were recorded in only 77 and 26 cases respectively. They have therefore been grouped in all tables with type iv, so that three principal groups of final diagnosis have remained—poliomyelitis without paralysis, poliomyelitis with paralysis and "not poliomyelitis." The numerical relationships between the groups are of some importance. Of all cases in the present survey, 31·3 per cent. did not have poliomyelitis. Of all cases accepted as poliomyelitis, 23·9 per cent. did not have paralysis. These facts will be commented on in a later section.

The "not poliomyelitis" group is important, consisting as it did of 626 patients whose clinical condition so closely simulated poliomyelitis that they had been notified as suffering from the disease. They provided a comparison group, the characteristics of which have been contrasted with those of the two poliomyelitis groups. The "not poliomyelitis" group included patients with severe and sometimes fatal illnesses ; a summarisation of the final diagnoses and outcomes of the illnesses is given in Table 3. The 40 deaths provided a fatality rate of 6·39 per cent. at all ages.

(*b*) **Type of illness and fatality rate.** The group of 1,047 patients with paralytic poliomyelitis suffered 118 deaths (11·27 per cent.) ; while of 329 patients with non-paralytic poliomyelitis 4 died (1·22 per cent.). This profound difference in fatality rates, apart from other differences which will be found in later sections of this survey, was enough to make it imperative, in later tables, to continue to distinguish between these two forms of the disease.

4. AGE

(*a*) **Age and type of illness.** The age distributions of the three main types of illness under consideration were most significantly dissimilar. To begin with the "not poliomyelitis" group, it contained a highly significant excess of adults. Comparisons of the age distributions of the two forms of accepted poliomyelitis showed that the highly significant differences were in the main due to there being relatively too many paralytic cases at ages under 6 and relatively too few at ages between 6 and 30. The proportions were fairly stable at ages over 30. These differences in age distributions have provided another reason—if one were needed—for continuing the distinction between the three groups throughout the survey.

Deaths from non-paralytic poliomyelitis were so few that it would be futile to emphasise the sparing of patients at ages between 4 and 30 (Table 4). The crude fatality rate of poliomyelitis with paralysis (11·27 per cent.) was distributed in a peculiar manner by age groups. There were two significant troughs in the fatality rate curve, one at ages under 5 and the other at ages 10–14. At all ages over 15, the rate was high. The lowest rate was at age 3. Further comment is postponed to the section on Discussion.

5. SEX

(*a*) **Sex and type of illness.** Sex distributions (Tables 5 and 6) show interesting features. There was an excess of males at all ages, males being 55·56 per cent. of the total cases of poliomyelitis. The excess was greater in non-paralytic cases (61·09 per cent.) than in cases with paralysis (56·45 per cent.); this difference, though suggestive, was not significant. There was almost an equality of males and females in the "control" group of patients whose final diagnosis was not poliomyelitis.

(*b*) **Sex, type of illness and age.** The excess of males in cases of poliomyelitis was not uniform through the age groups; this is best shown by the following small supplementary table.

TABLE A

All accepted cases of poliomyelitis

Age Group	*Percentage of Male cases*
Under 5	59·6%
5–9	57·1%
10–14	58·3%
15–19	64·3%
20–29	48·0%
30+	50·5%

The variations from a uniform excess were, however, easily attributable to chance and it can be taken that the male excess was uniform through the age groups.

The proportion of males with non-paralytic forms of the disease has been described as high. This proportion was not quite uniform throughout the age groups, but the only significant deviations from the general mean was at ages under 5, and the whole distribution did not depart significantly from a uniform excess of males. The following table is self-explanatory.

TABLE B

Percentage non-paralytic to total cases of poliomyelitis

Sex	Under 5	5–9	10–14	15–19	20–29	30–	All Ages
M	15·8%	33·3%	38·5%	33·3%	35·6%	14·3%	25·38%
F	9·4%	35·5%	29·5%	22·9%	28·1%	27·1%	21·91%
Both	13·2%	34·3%	34·8%	29·6%	31·7%	20·6%	23·91%

There was almost an exact equality of males and females at all ages in the "not poliomyelitis" group. This equality was not so evident in the separate age groups; at ages under 15 there was an excess of males and at older ages an excess of females. The figures have been tested to find whether these excesses were significant, which they have been found not to be. The distribution can be taken as being substantially equal between the sexes. In this respect it differed from the sex distributions of the poliomyelitis groups, with their relatively large numbers of male cases, particularly at ages under 15.

(*c*) **Sex, age, type and outcome of illness.** At first glance, there was a suggestive association between male sex and death : in cases of poliomyelitis with paralysis, the fatality rate in males was 12·52 per cent., whereas in females the rate was 9·65 per cent. Since this difference might be only the result of uneven incidences at different ages, the differences in each age group were examined separately. (In this computation, ages 10–14 and 15–19 had to be added together because of a small expectation in one cell.) It was found that there was a significantly high fatality rate in males at ages under 5, compared with females in the same age group. Other differences were trivial, and the distribution as a whole did not show that affected males were more prone to die from paralytic poliomyelitis.

Within the " not poliomyelitis " group, males suffered a slightly higher crude fatality rate. At first glance this slight difference did not appear material, but it must be mentioned that the male fatality rate was significantly high at ages 20 and over, and that this difference was almost enough to outweigh the trivial differences at ages under 20 and to bring the difference, over the whole age distribution, to the verge of significance.

The main result of these observations has been to make it appear of little value to retain sex differentiation in later tables ; accordingly, unless for some special reason, sex has been omitted as a method of classifying the data.

6. GEOGRAPHY

(*a*) **General.** As has been already recorded,[1] Orkney County, Ross and Cromarty County and Inverness Burgh had no notified case during the period of high prevalence. Seven Local Authority areas had more than 50 notifications. Most Local Authority areas had considerably less, so much so that the Local Authority could not be used as the geographical unit in this survey. Geographical subdivision of Scotland has been made into four parts—(i) Glasgow, (ii) the other three Cities, (iii) the 20 other Large Burghs and (iv) the Counties (excluding Large Burghs). Whatever its defects, this classification gives a gradient of urbanisation within Scotland. Some observations having been made on sex distributions in the first survey, sex differentiation was retained in the construction of Tables 7–10 which contain the basic information.

(*b*) **Geography and type of illness.** The following table, abstracted from Tables 7–10, shows some major differences between areas of Scotland, as defined above.

TABLE C

Area	*Per cent. of Total Cases not Accepted as Polio*	*Per cent. of Accepted Cases not Paralytic*
Glasgow	42·1	19·0
3 Cities	40·7	23·3
20 Burghs ...	26·4	25·7
Counties	21·0	26·0
Scotland	31·2	23·9

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[1] Report of the Department of Health for Scotland for the Year 1947 ; p. 24.

The trends, both of which are highly significant, were towards a lower proportion of accepted cases in relation to all notifications, and a higher relative number of non-paralytic cases, as one proceeded from urban to rural populations and environments. Pending fuller comment in a later section, it may be as well here to refer back to the last part of section 2 (*b*) as a very partial explanation of the low figure of 26·4 per cent. " not accepted " cases in the 20 Large Burghs.

The two types of illness leading to assessable numbers of deaths were paralytic poliomyelitis and " not poliomyelitis." The crude fatality rate of paralytic poliomyelitis, when studied by areas, showed variations from the Scottish mean, but these were not of significance ; equally, areal fluctuations in the crude fatality rate of " not poliomyelitis " were insignificant. The material of the survey was therefore, from at least one point of view, homogeneous.

(*c*) **Geography, type of illness and age.** There would have been little point in comparing crude age distributions in the four areas studied, when it was known that each age distribution was the summation of three varying constituents —the non paralytic, the paralytic poliomyelitis and the " not poliomyelitis." These three groups were assessed separately and significant areal age differences from the Scottish means were found neither in individual illness groups nor in the whole distribution. The significant differences reported in section 4 (*a*) were not, of course, affected.

The age incidence of the disease in geographical areas within Scotland could not be assessed so finely as in the whole country. The following table gives the available rates.

TABLE D

Incidence rates per 10,000 population of 1,376 accepted cases of poliomyelitis

Area	Type of Poliomyelitis	Age Groups			
		Under 5	5–14	15–	All Ages
Glasgow	Non-paralytic	1·81	1·72	0·12	0·53
	Paralytic ...	14·72	3·78	0·46	2·27
	Both Types	16·53	5·50	0·58	2·81
Edinburgh, Dundee and Aberdeen.	Non-paralytic	1·92	2·29	0·23	0·66
	Paralytic ...	12·98	4·58	0·60	2·15
	Both Types	14·90	6·86	0·83	2·81
20 other Large Burghs	Non-paralytic	1·05	1·85	0·18	0·52
	Paralytic ...	8·43	2·54	0·43	1·49
	Both Types	9·49	4·39	0·61	2·01
Counties excluding Large Burghs.	Non-paralytic	1·84	2·20	0·29	0·73
	Paralytic ...	10·03	4·21	0·71	2·08
	Both Types	11·88	6·41	1·00	2·80
Scotland	Non-paralytic	1·71	2·05	0·23	0·64
	Paralytic ...	11·24	3·90	0·59	2·04
	Both Types	12·96	5·94	0·82	2·68

The Registrar-General (Scotland) kindly provided the population estimates upon which the above rates were based. The crude incidence rate, significantly low in the 20 Large Burghs, was otherwise constant. The age-specific incidence rates showed a significant tendency to higher ages at attack as one proceeded from urban to rural environment. This is perhaps better shown in the following Table E.

TABLE E

Age-specific incidence rates of Table D expressed as percentage of crude incidence rate at all ages

Area	Age Groups		
	Under 5	5–14	15–
Glasgow	588%	196%	20·6%
3 Cities	530%	244%	29·5%
20 Burghs	472%	218%	30·3%
Counties	424%	229%	35·7%
Scotland	484%	222%	30·6%

(*d*) **Geography, type of illness and sex.** A procedure similar to that of (*c*) above was followed. The result was similar: neither in individual groups nor in the whole distribution were there significant areal deviations from the crude sex ratio in all Scotland.

Fatality rates were unaffected, for each sex, by the location of the patient, and no significant difference could be found between sex-specific fatality rates of any of the four areas. The absolute numbers of deaths were too small to permit of sex- and age-specific fatality rates being compared in detail between the four areas.

The main result of these observations has been to make it appear of little value to retain areal differentiation in later tables; accordingly, unless for some special reason, geography has been omitted as a method of classifying the data.

7. HISTORY OF ILLNESS

(*a*) **General.** The summary record card provided for entries showing the nature of infectious illness affecting the respiratory and digestive tracts, during the twelve months preceding the attack of poliomyelitis. In this way it had been hoped to verify or disprove the occurrence, in the 1947 outbreak, of a greater susceptibility to poliomyelitis consequent on recent illness of this nature. The results of tabulation of the data are given in Table 11.

The table originally contained separate sections for patients who had histories of digestive tract illnesses only and for those who had histories of digestive tract plus respiratory tract illnesses. The total numbers in these sections were 28 and 11, neither of which could suffer any useful subdivision in detailed comparisons. They were therefore combined to form the last section of the published table. The possibility of some slight additional information has been lost thereby, and it must be mentioned that the observed number of cases (11) with histories of both respiratory and digestive infections was very significantly higher than the number (3·8) calculated as " expected."

Of all patients, 11·39 per cent. had some history of illness as defined, and the greater bulk of recorded illness was provided by the 9·44 per cent. who had suffered from infections of the respiratory tract only.

(*b*) **Previous history and type of present illness.** The following table summarises some of the data.

TABLE F

Final Diagnosis	Previous Illnesses			
	None	Respiratory only	Others	Total
Not poliomyelitis	93·61%	5·11%	1·28%	100%
Polio. without paralysis ...	88·45%	9·42%	2·13%	100%
Polio. with paralysis ...	85·67%	12·03%	2·29%	100%
All Diagnosis ...	88·61%	9·44%	1·95%	100%

The differences between poliomyelitis without paralysis and poliomyelitis with paralysis were found not to be significant, but the antecedent history of patients whose final diagnosis was not poliomyelitis differed most significantly from that of the rest of the patients in the survey. As Table F shows, there was a definite association between a history of previous illness and the later acquisition of poliomyelitis. Without anticipating later discussion on the importance of the facts, the question may be posed here whether the history can be accepted as reliable. It is possible that cards were not so carefully completed when it was known that the case had not been one of poliomyelitis : the subject will be taken up again.

(*c*) **History, type of illness and age.** Amplifying Table F above, the following table has been calculated. Owing to small numbers, it has not been practicable to continue to distinguish between histories of respiratory illnesses only and other histories.

TABLE G

Age Group	Percentage of Cases with History of Previous Illness	
	Final Diagnosis not Polio.	Final Diagnosis Polio.
0–4	9·62%	18·21%
5–9	5·00%	13·84%
10–14	4·35%	12·83%
15–19	1·6 %	7·14%
20–29	13·3 %	3·25%
30–	1·2 %	9·3 %
All Ages	6·39%	13·66%

The above table has features of considerable interest ; both columns have an irregular but significant trend towards lower percentages of positive histories with increasing ages at attack, and—except at ages 20–29, when the percentage in the first column significantly exceeds that in the second—the percentages in the first column are very significantly below those in the second. Whatever factors have led to the association of antecedent illness and predisposition to an attack of poliomyelitis, these factors have operated with some uniformity throughout life.

In spite of the similarity of the histories of those patients who had poliomyelitis without paralysis and those who had poliomyelitis with paralysis (judged on the crude percentage of positive histories at all ages), these types of illness have been compared by age groups, as in the table below.

TABLE H

Age Group	Percentage of Cases with History of Previous Illness	
	Polio. without Paralysis	Polio. with Paralysis
Under 5	18·2 %	18·2 %
5–9	16·2 %	12·6 %
10–14	10·8 %	12·3 %
15–	1·1 %	8·26%
All Ages	11·55%	14·32%

The excess of positive histories in the second column at ages over 15 was significant, but this was the only significant difference between the two distributions, which as wholes were mainly consonant. The fall in the percentages of positive histories, with advancing ages, is evident in both columns of the above table.

(*d*) **History and fatality rate.** No association has been found between the previous histories of patients and the fatality rates which they suffered.

This section may be summarised as having shown that a history of infectious illness affecting the respiratory and, to a numerically lesser extent, the digestive tract during the preceding year has been closely associated with the acquisition of poliomyelitis during the 1947 outbreak. The type of poliomyelitis (paralytic or non-paralytic) has not been shown to be associated with the previous history. In spite of such significant findings, future tables are not subdivided according to previous history, unless for some specific reason, in the main because the group with positive history was not large and could not usefully suffer much finer subdivision.

8. HOUSING—NUMBER OF APARTMENTS

(*a*) **General.** This was the first classification of the data in which some gaps in information became obvious. All patients in the survey had personal details such as age and sex fully recorded. In section 7 (*b*) the possibility of omission of some histories of antecedent infections was mentioned. In this section it has to be recorded that information was not forthcoming for 85 patients, or 4·2 per cent. of the total. Fuller details are available in Table 12. In a few instances, patients had taken ill very soon after leaving their homes on holiday, and the authorities of the home area had not sent information on the home environment. In most instances the data had been omitted without stated reason.

(*b*) **Number of apartments and type of illness.** Excluding cases in which apartments were unstated, the bottom line of Table 12A gives proportional distributions at all ages. Comparisons of the absolute figures have shown that poliomyelitis without paralysis and poliomyelitis with paralysis had essentially the same " room " distributions at all ages ; these could therefore be combined and the new distribution contrasted with that of patients with a final diagnosis other than poliomyelitis, when a highly significant difference was found. Neglecting, for the time being, any effects of non-uniform age distributions, poliomyelitis was a disease of those in relatively larger houses, " not poliomyelitis " being found rather in smaller houses.

Deficiencies in information were concentrated in the " not poliomyelitis " types of illness, in which 12 per cent. had their number of apartments unstated, as against 0·73 per cent. of the total of accepted cases of poliomyelitis. This fact will be commented on later.

(*c*) **Number of apartments, type of illness and age groups.** The summary table is reproduced as Table 12A. The first comment is on variations within distributions. None of the types of illness has a homogeneous distribution ; the three distributions show that, for each type of illness, the younger patients lived, on the whole, in worse housing environment as judged by rooms per house. The lack of uniformity in room distribution was very highly significant in patients with both forms of poliomyelitis, and significant in the " not poliomyelitis " type of illness.

Justification is necessary of the step of combining all ages under 5, when a pronounced age trend has been found. The distributions by years and house apartments at ages under 5 have been examined and found not to differ significantly from uniformity, so that little or no information has been lost by the compression of data.

Comparisons between distributions were simplified by the result of a comparison, by age groups, between the apartment distributions of paralytic and non-paralytic cases of poliomyelitis : the differences between the distributions were insignificant, so that poliomyelitis—as a whole—could be contrasted with " not poliomyelitis." This contrast revealed that the housing environment (qua rooms) of cases of poliomyelitis was superior in all age groups to that of cases of " not poliomyelitis" but the significance of the differences varied from one age group to another, as below :—

Ages under 5	: not significant ;
Ages 5–9	: very highly significant;
Ages 10–14	: significant ;
Ages 15–19	: highly significant ;
Ages 20–29	: very highly significant ;
Ages 30–	: highly significant ;
All Ages	: very highly significant.

Thus, in children under 5, all patients—whether they were eventually found to have had poliomyelitis or not—tended to develop their illnesses in smaller homes ; older patients who did not have poliomyelitis tended to come from larger homes, but this tendency was less pronounced than that of patients who had poliomyelitis at ages over 5, this last group being the best housed, as judged by number of apartments, of all the groups. It will be evident, by inspection of the absolute figures of Table 12, that in assessing their significance some compression had to be made because of small numbers ; in general, houses of less than three apartments had to be grouped together for patient ages above 10, so as to yield assessable figures.

(*d*) **Number of apartments and fatality rates.** The only type of illness in which there was any suggestion of an association between number of apartments and fatality rate was poliomyelitis with paralysis. The progression was as follows :

Apartments	*Fatality Rate*
1	4·92%
2	8·58%
3	11·54%
4	11·92%
5 or more	14·58%
Institutions	20% (3 out of 15)

The actual figures did not differ significantly from those of a null hypothesis (room number not associated with fatality rate), and remain no more than suggestive.

9. HOUSING—NUMBER OF OCCUPANTS

(*a*) **General.** This classification of the data was the second to show obvious gaps in the data. In 92 case summaries (4·6 per cent. of the total) the number of occupants in the household of the patient was unstated, generally without any special reason given for the omission. In the tabulation of the data (Tables 13 and 13A) some columns have been combined because of small absolute numbers : for instance, houses with one occupant have not been shown separately from those with two occupants.

(*b*) **Number of occupants and type of illness.** Distributions are given in the last line of Table 13A. Poliomyelitis, with or without paralysis, had a peak in houses of four occupants whereas patients with a final diagnosis " not poliomyelitis " had a more even distribution which lacked a peak at four-occupant houses. Comparisons of these crude distributions which, of course, were at " all ages " and therefore uncorrected for known differences in age constitutions of the illness types, showed that (*a*) there was a significant difference between the distributions of poliomyelitis without paralysis and poliomyelitis with paralysis ; (*b*) there was highly significant difference between the distributions of poliomyelitis with paralysis and " not poliomyelitis " ; and (*c*) there was no significant difference between the distributions of poliomyelitis without paralysis and " not poliomyelitis." These crude comparisons have given a result totally different from the similar comparisons of apartment distributions, and have indicated roughly that, from the point of view of number of occupants in a household, poliomyelitis with paralysis was a different disease from the other two main types of illness under consideration, but that these two latter types were not readily distinguishable one from the other, by this criterion. The comparison will be elaborated in the next subsection ; for the moment, it would appear that poliomyelitis with paralysis again tended to be a disease of the better housed—if by better housed is meant a population that is living generally with fewer persons per dwelling. The same did *not* apply to poliomyelitis without paralysis.

Deficiencies in information were concentrated in the " not poliomyelitis " group, of which 12·6 per cent. had the number of occupants of the household unstated, as against 0·94 per cent. of poliomyelitis cases.

(*c*) **Number of occupants, type of illness and age groups.** Table 13A gives part of the data of Table 13, arranged as percentages. None of the illness types was homogeneous within itself. In general, with advancing age the patients tended to live in houses with smaller numbers of occupants, a shift mainly due to increases in cases in houses with less than four occupants, with compensating reductions in cases in houses with six (or more) occupants. This trend having shown itself very significantly in the " not poliomyelitis " type of illness, as well as in the other two types, it was of interest to make age-specific comparisons.

Some comparisons of poliomyelitis without paralysis and poliomyelitis with paralysis revealed a very significant difference at ages 5–9, but only insignificant differences in other age groups. The one significant difference mentioned was enough to bring the difference over the whole age distribution to a point of considerable significance, and may be therefore slightly expanded : it was attributable to a relative deficiency of non-paralytic cases in houses with small numbers of occupants (four or less) and a relative excess of such cases in houses with seven or eight occupants. The observed difference has made it impossible to justify the adding together of all cases of poliomyelitis for a further comparison with " not poliomyelitis," a procedure which was found possible in section 8 (*c*) above.

The slightly longer procedure has therefore been used of comparing " not poliomyelitis " with poliomyelitis (without paralysis) and separately with poliomyelitis (with paralysis) by age groups. The first of these two comparisons led to the results that neither in any one age group nor in the whole distribution was a significant difference found. The second led to the finding of very significant differences at ages 5–9 and 10–14, with a significant difference at ages 20–29 and a highly significant difference over the whole distribution. In general, patients with paralytic poliomyelitis tended to come from households with five or less occupants whereas patients whose final diagnosis was not poliomyelitis tended to come from households with larger numbers of occupants.

On the analogy of the method of handling the data in section 8 (*c*), " not poliomyelitis " and poliomyelitis without paralysis could have been combined for comparison with poliomyelitis with paralysis ; this procedure was not adopted.

(*d*) **Number of occupants and fatality rates.** The number of occupants in the household had no significant association with the fatality rate of any of the three types of illness.

10. HOUSING—DEGREE OF CROWDING

The division of notifications by numbers of apartments and of occupants is shown in Table 14. From this table, two others (Tables 14A and 14B) have been derived, and the method needs some explanation.

In the first place, Table 14 shows neither numbers of apartments, numbers of occupants nor age groups in such detail as preceding tables. This compression of data was a necessary result of the increase in the headings under which the data were classified. In the second place, no attempt has been made to fix any arbitrary standard of under- or over-crowding ; in particular, it was not considered necessary to use any quotient (such as two persons per room) when it could be left to the data to provide whatever standards could be found. In the third place, no attempt has been made to give precedence to either the numbers of apartments or the number of occupants. This last consideration has led to the inclusion of Tables 14A and 14B. In Table 14A the data have been considered for houses of stated numbers of apartments which have then been sub-divided according to the numbers of occupants. The reverse procedure has been used to compute Table 14B, which deals with household units of stated numbers of persons which have then been sub-divided according to the numbers of apartments which they occupied. It is convenient to deal with these aspects of the data separately.

10A. APARTMENTS STATED—OCCUPANTS VARIABLE

(*a*) **General.** Absolute numbers are in Table 14 and percentage distributions in Table 14A. Table 14 is best read in horizontal sections for this purpose, the absolute figures corresponding to the percentages of Table 14A.

(*b*) **Apartments, occupants, types of illness and age groups.** The data have been examined for each stated size of house, as below.

(i) **One apartment.** None of the three types of illness showed lack of uniformity when sub-divided by age groups and number of occupants. A valid comparison was therefore possible between poliomyelitis without paralysis and poliomyelitis with paralysis at all ages ; this showed that their occupant distributions did not differ significantly, so that they could be added together and contrasted with " not poliomyelitis " at all ages. In actual fact, the comparison was made at ages under and over 5 years. Neither in separate age groups nor at all ages was there a significant difference between the occupant distributions of poliomyelitis and " not poliomyelitis."

(ii) **Two apartments.** Cases not finally accepted as poliomyelitis, when tabulated by age groups and numbers of occupants, were non-uniformly distributed ; the largest relative deviations from uniformity were at ages 5–14 at which there was an excess of cases in houses with 5 occupants, and ages over 15, where there was an excess in houses with less than four occupants. The corresponding distribution for non-paralytic poliomyelitis was uniform : but that for paralytic poliomyelitis was non-uniform. The main deviations from uniformity in this last distribution were (*a*) at ages under 5, with an excess of cases in houses with six or more occupants, (*b*) at ages 5–9, the excess of cases being in houses with less than five occupants and (*c*) at ages 10 and over, where the excess was in houses with less than four occupants.

The age-occupants distributions of the two types of poliomyelitis differed significantly at ages 5–9 and suggestively at ages over 10 ; paralytic poliomyelitis was associated with patients living in smaller family groups, on the whole. The difference at all ages was significant. Because of this finding, a simple comparison between " not poliomyelitis " and poliomyelitis (regardless of type) was not possible in the age group 5–9.

At ages under 5, the occupant distributions of poliomyelitis and " not poliomyelitis ' did not differ significantly. At ages 5–9 no significant difference was found between " not poliomyelitis " and non-paralytic poliomyelitis ; in this age group, however, there was a significant difference between the occupant distributions of " not poliomyelitis " and paralytic poliomyelitis, the latter being in excess in households with less than five occupants. No significant difference was found at ages over 10. Over the whole distribution, poliomyelitis appeared significantly in excess in houses with smaller numbers of occupants, i.e. less than five.

(iii) **Three apartments.** The distribution of " not poliomyelitis " by age groups and occupants departed significantly from uniformity, there being relative excesses of cases (*a*) at ages under 5, in houses with seven or more occupants, (*b*) at ages 5–14, in houses with six occupants and (*c*) at ages over 15, in houses with less than six occupants. The corresponding distribution for cases of poliomyelitis without paralysis was very significantly non-uniform, with excesses of cases at ages under 10 in houses holding six or more persons and, at ages over 10, in houses holding less than five occupants. The distribution of cases of poliomyelitis with paralysis was essentially uniform.

Comparison of the occupant distributions of non-paralytic and paralytic poliomyelitis was made in two age groups ; at ages under 10, they differed very significantly, paralytic cases being in excess in houses with less than five occupants. There was no significant difference at ages over 10. Over the whole distribution, there was a significant difference, attributable to the very significant difference just mentioned.

The final comparisons between " not poliomyelitis " and the two types of poliomyelitis were determined by the preceding findings, and partly by the available absolute numbers of cases in each age group. The occupant distributions of " not poliomyelitis " and non-paralytic poliomyelitis did not differ significantly, either in any one age group or over the whole distribution. The differences between the occupant distributions of " not poliomyelitis " and paralytic poliomyelitis did not attain formal significance either in the individual age groups or over the whole distribution. It may be mentioned in passing that some arrangements, showing significant differences, could be made ; for instance, at all ages under 10 the occupant distributions of " not poliomyelitis " and paralytic poliomyelitis did differ significantly.

(iv) **Four apartments.** In houses of this size, the distributions of " not poliomyelitis " and non-paralytic poliomyelitis, by age groups and numbers of occupants, were substantially uniform. That of paralytic poliomyelitis, however, was far from uniform, with a relative excess of cases at ages under 10 in houses containing five or more occupants and a relative excess of cases at ages over 10 in houses with less than five occupants. The differences between the distributions of non-paralytic and paralytic poliomyelitis were not significant, either in individual age groups or cumulatively over the whole distribution.

In view of the findings just referred to, a direct comparison of distributions at all ages could be made between " not poliomyelitis " and non-paralytic poliomyelitis. The distributions differed very significantly, poliomyelitis without paralysis tending to occur in excess in households with four or five occupants. The comparisons between " not poliomyelitis " and paralytic poliomyelitis had to be made by separate age groups. At ages under 10 the distributions differed significantly, the excess of accepted (paralytic) cases being in households with four or five occupants. At ages 10 and over, a highly significant difference emerged, paralytic poliomyelitis occurring in excess in houses with four or less occupants. Over the whole distribution, the differences were of considerable significance.

(v) **Five or more apartments.** None of the three types of illness showed a distribution by age groups and numbers of occupants, significantly departing from homogeneity. The distributions of the two types of poliomyelitis, at all ages, did not differ significantly. A direct comparison was possible between all accepted notifications and all unaccepted notifications, at all ages : this revealed a highly significant difference, accepted cases being relatively in excess in households with four or less occupants.

(vi) **All (stated) apartments.** The following comments do *not* apply merely to the bottom sections of Tables 14 and 14A ; they allow for the distributional differences shown by the upper sections. The distributions of " not poliomyelitis " by age groups and numbers of occupants were, most significantly, not homogeneous, as were those of poliomyelitis with paralysis. The corresponding distributions of poliomyelitis without paralysis were substantially homogeneous. The nature of the deviations from homogeneity in the distributions of rejected notifications (" not poliomyelitis ") and cases of poliomyelitis with paralysis is adequately shown by the percentage figures of Table 14A and is not described in detail here.

The differences between distributions of non-paralytic and paralytic poliomyelitis were not significant ; those between rejected and accepted notifications were very significant. Their nature is again shown by Table 14A. In view of the remarks in the opening paragraph of this section, the data can be considered to have given the following summarised differences.

TABLE J

Location of excess of poliomyelitis cases in houses with stated numbers of apartments

Number of Apartments	*Number of Occupants*				
	–4	4	5	6	7–
1	—	—	—	—	—
2	xs.	xs.	—	—	—
3	—	—	—	—	—
4	xs.	xs.	xs.	—	—
5–	xs.	—	—	—	—

Fuller comment on this result will be made later. It is evident, however, that the relationship with the degree of crowding is somewhat variable.

(*c*) **Fatality rates by occupants, for stated apartments.** It was not found that, for any stated size of house (by apartments) numbers of occupants were significantly associated with fatality rate of either rejected notifications or poliomyelitis with paralysis. Deaths from poliomyelitis without paralysis were too infrequent to permit any comparisons. Over the whole distribution of stated apartments, no significant association was found between fatality rates of rejected notifications and numbers of occupants; the same lack of association held for poliomyelitis with paralysis. The number of occupants was therefore probably a factor of little import in determining the suggestive progression of rates already noted in section 8 (*d*) of this survey.

10B. OCCUPANTS STATED—APARTMENTS VARIABLE

(*a*) **General.** Absolute numbers are again in Table 14, read this time in vertical sections; percentage figures are in Table 14B.

(*b*) **Occupants, apartments, types of illness and age groups.** In this classification, the number of occupants in the household has been taken as the more fixed unit, and distributions by numbers of apartments, age groups, etc., examined.

(i) **Less than four occupants.** Regrettably, the numbers of notifications in this category were insufficient to allow of finer tabulation. Rejected notifications (" not poliomyelitis ") when classified by age groups and numbers of apartments in the house were very significantly inhomogeneous. There was an excess of cases below the age of 10 in one-apartment houses and an excess of cases of 10 years and over in houses of three or more apartments. The corresponding distribution for non-paralytic poliomyelitis was homogeneous; that of paralytic poliomyelitis was very significantly non-uniform, with excesses of cases, below the age of 5 in houses of less than four apartments, at ages 5–14 in houses of four or more apartments, and at ages 15 and over, also in houses of four or more apartments.

The distributions of non-paralytic and paralytic poliomyelitis were not significantly dissimilar and could be added for contrasts with that of rejected notifications. These showed that, at ages below 10, poliomyelitis was in excess in family groups living in houses of larger size—mainly three or more apartments; and that at ages 10 and over, the same trend was evident but the excess was in houses of four or more apartments.

(ii) **Four occupants.** The distribution of rejected notifications was uniform. That of non-paralytic poliomyelitis was not; below the age of 10 there was an excess of cases in houses of less than three apartments, while at age 10 and over the excess was in houses of three or more apartments. The distribution of cases of paralytic poliomyelitis was, very significantly, not uniform, there being excesses of cases in houses of less than four apartments at ages under 5, in houses of four apartments at ages 5–14, and in houses of four and more apartments at ages 15 and over.

Distribution of non-paralytic and paralytic poliomyelitis differed significantly at ages under 10, paralytic cases having a preponderance in houses of three apartments; at age 10 and over, and over the whole age distribution, there was not a significant difference between the apartment distributions of the two types of illness.

The distributions of rejected notifications and of poliomyelitis without paralysis did not differ significantly at ages under 10. Those of rejected notifications and of poliomyelitis with paralysis were significantly different, the excess of poliomyelitis cases, under age 10, being in houses of three or more apartments.

At age 10 and over, a straight comparison of rejected and accepted cases was possible, a most significant difference being found, with the excess of accepted notifications in houses of four or more apartments.

(iii) **Five occupants.** The " not poliomyelitis " cases were not uniformly distributed, the excess being in houses of one and two apartments at ages under 10 and in houses of three or more apartments at age 10 and over. Poliomyelitis cases without paralysis were evenly distributed ; cases with paralysis were most significantly uneven in their distribution, with an excess at ages under 5 in houses of less than three apartments, an excess at ages 5–14 in houses of four and more apartments and an excess at age 15 or more in houses (mainly) of five or more apartments.

The distributions of the two types of poliomyelitis were consistent one with the other. They were accordingly summed for contrast with the distributions of the rejected notifications. Rejected and accepted notifications differed significantly in their distributions at ages under 10, accepted cases being in excess in houses of four or more apartments. They also differed significantly at age 10 and over, the excess being in houses of five or more apartments.

(iv) **Six occupants.** The distribution of rejected notifications was uniform, as was that of cases of poliomyelitis without paralysis. Cases of poliomyelitis with paralysis had a non-uniform distribution, with an excess of cases at ages under 5 in houses of one or two apartments, and a counterbalancing excess at older ages in houses of three or more apartments. The distributions of the two types of poliomyelitis were, however, consistent one with the other both in younger and older patients.

The distributions of rejected and accepted notifications did not differ significantly at ages under 5. At age 5 and over, there was a highly significant difference due to the excess of accepted notifications in houses of five or more apartments. Over the whole distribution the difference was significant.

(v) **Seven or more occupants.** The distribution of rejected notifications was uniform. That of cases of non-paralytic poliomyelitis was, very significantly, not uniform ; below the age of 10 there was an excess of cases in houses of less than four apartments, and at age 10 and over the excess was in houses of five or more apartments. The distribution of cases of paralytic poliomyelitis was most significantly not uniform, there being an excess of cases at ages under 5 in houses of less than three and of four apartments, at ages 5–14 in houses of three and of five or more apartments and, at age 15 or over, in houses of five or more apartments.

The distributions of non-paralytic and paralytic types of poliomyelitis did not reveal significant differences. They were summed for age-specific comparisons with rejected notifications, which did not exhibit significant differences at ages under 5 and at ages 5–14. At age 15 and over there was a significant difference, the excess of accepted notifications being in houses of five or more apartments.

(vi) **All (stated) occupants.** In the following comments allowance has been made for distributional differences in the several component vertical sections of Table 14, i.e. the deductions have not been based merely on interpretation of the right-hand (summary) section of that table. Rejected notifications were, very significantly, unevenly distributed. The significance of the non-uniformity of the distributions of both non-paralytic and paralytic poliomyelitis was very great.

The differences between distributions of the two types of poliomyelitis were not significant. Those between rejected and accepted notifications were very highly significant. The nature of these differences is evident in Table 14B. The following table summarises the main significant differences.

TABLE K

Location of excesses of poliomyelitis cases in houses with stated numbers of occupants

Number of Occupants	Number of Apartments 1	 2	 3 +	 4	 5–
–4	—	—	—	xs.	xs.
4	—	—	xs.	xs.	xs.
5	—	—	—	xs.	xs.
6	—	—	—	—	xs.
7–	—	—	—	—	±

Comment will be made on these results in a later section.

(*c*) **Fatality rates by apartments, for stated occupants.** The rejected notifications did not show, for any or all stated numbers of occupants in the household, any association between fatality rates and number of apartments. Cases of poliomyelitis with paralysis showed a significant association in houses with four occupants; in these, patients living in houses of three or four apartments experienced an unusually heavy fatality rate compared with others in smaller or larger houses. The significance of this difference was sufficient to bring the differences, over the whole occupant-apartment distribution, to the level of formal significance. It must be mentioned that in no other occupant group did houses of three or four apartments show so unfavourably; in general, the trend was towards higher fatality rates in the largest houses of four or more apartments.

11. HOUSING—SANITARY CONDITION

(*a*) **General.** The sanitary condition of the home environment was compressed into three recorded categories (Appendix I, heading 7 (iv)). This, admittedly, did not allow much scope for observations on insect infestation, sewage disposal and many other possible aspects of sanitation. Of all cases, 106 (5·3 per cent.) did not have the sanitary condition recorded. The data are presented for all cases in Table 15, from which Table 15A has been derived.

(*b*) **Sanitary condition and type of illness.** Percentage distributions are given in the last line of Table 15A. On the whole, cases of poliomyelitis tended to occur in houses of good sanitary condition, cases with a final diagnosis other than poliomyelitis tending to occur in houses of fair sanitary condition. Once again the proportion of returns lacking information on this aspect of environment was much higher in the " not poliomyelitis " illnesses (81 unstated, or 12·9 per cent· of such cases) than in illnesses finally diagnosed as poliomyelitis (25 unstated, or 1·8 per cent. of such cases).

(*c*) **Sanitary condition, type of illness and age groups.** Tables 15 and 15A give absolute numbers and percentages respectively. The only one of the three illness groups in which the internal distribution was significantly non-uniform was poliomyelitis with paralysis. In this type of illness the tendency was towards a relative deficiency of patients in houses of good sanitary condition at ages under 5, with a corresponding relative deficiency of patients in houses of fair or poor sanitary condition at ages over 5. Similar but insignificant trends appeared in the data for the two other illness types.

Age-specific comparisons of sanitary conditions, between illness types, were simplified by an initial finding that the differences between non-paralytic and paralytic poliomyelitis were not significant in any one age group, nor were they over the whole distribution. This enabled poliomyelitis, as a whole, to be compared with " not poliomyelitis." This last comparison revealed very highly significant differences in all age groups (except at ages under 5 and 10–14) and in the whole distribution. In general, poliomyelitis tended to be associated with good sanitary conditions at all ages, whereas illnesses finally diagnosed " not poliomyelitis " tended to be associated with fair (*not* bad) sanitary conditions. There was an exception to this general rule at ages under 2 ; in this age group the trend was the other way although, as stated, not formally significant.

(*d*) **Sanitary condition and fatality rate.** Though there was a tendency towards patients with paralytic poliomyelitis faring slightly better when they came from homes of worse sanitary condition, there was no significant association between sanitary condition of the home and the outcome of illness in any of the three major types of illness under consideration.

12. SOCIAL CLASS

(*a*) **General.** The occupation of the chief wage earner in any affected household was entered in the summary, as was that of the patient when not the chief wage earner. These occupations were coded into the five social classes of the Registrar-General. Almost without exception, no discrepancies were found between social classes within household groups ; e.g. in no instance was there a household with a father in social class IV and an affected member of the family in social class II. The definition of the chief wage earner was taken as that in common use by the Social Survey.

The basic information on social class distribution is given in Tables 16 and 16A. Once again, the " not poliomyelitis " type of illness had the largest proportion of unstated social classes (13·4 per cent.) ; social class was unstated in only 1·2 per cent. of the records of patients accepted as cases of poliomyelitis. Of the 1,901 patients for whom social class information had been provided, 293 (15·4 per cent.) were in social classes I or II, 856 (45 per cent.) in class III, 494 (26 per cent.) in class IV and 258 (13·6 per cent.) in class V.

(*b*) **Social class and type of illness.** Excluding cases with social class unstated, the bottom line of Table 16A gives proportional distributions. This was used to make the first rough comparisons between the various types of illness, yielding *prima facie* evidence that both types of poliomyelitis tended to affect selectively the more comfortably placed social classes (I and II).

(*c*) **Social class, type of illness and age groups.** Table 16A summarises the data. Variation in social class distributions, by age groups, within each illness type was first examined. The social class distributions of poliomyelitis without paralysis and of " not poliomyelitis " were found each to be essentially homogeneous ; poliomyelitis without paralysis showed a very significantly non-uniform social class distribution, with, in particular, considerable deficiencies of cases in the upper social classes (I and II) at ages under 3, and considerable excesses of such cases at ages over 5, with the greatest relative excesses at ages over 20.

Next, in age-specific groups, poliomyelitis with paralysis and poliomyelitis without paralysis were contrasted by social class. Apart from a significant difference at ages over 15 (paralysis being associated with classes I and II at these ages) any differences were negligible ; and the differences between the social class distributions of the two types of illness, allowing for inequalities in age incidences, were not significant. This result enabled these two types of illness to be combined for comparison with " not poliomyelitis."

The result of that comparison was as follows :—

Social class difference at ages under 2 : negligible ;
,, ,, ,, ,, ,, 2–4 : negligible ;
,, ,, ,, ,, ,, 5–9 : very highly significant ;
,, ,, ,, ,, ,, 10–14 : highly significant ;
,, ,, ,, ,, ,, 15–29 : very highly significant ;
,, ,, ,, ,, ,, 30– : very highly significant ;
,, ,, ,, ,, all ages : very highly significant.

Reference to Table 16A shows clearly that the main differences were attributable to a concentration of cases accepted as poliomyelitis in social classes I and II.

(*d*) **Social class and fatality rates.** Some evidence suggestive of an association between social class and fatality rate was found in a first scrutiny of the tables. In detail, no association could be sought in poliomyelitis without paralysis, with only four deaths in all. " Not poliomyelitis " gave the following fatality rates : social classes I and II, 12·5 per cent. ; social class III, 10·1 per cent. ; social class IV, 10·4 per cent. ; and social class V, 7·4 per cent. The apparent trend was not significant.

The number of deaths in poliomyelitis with paralysis was enough to permit some division into age groups, as below :—

TABLE L

Poliomyelitis with paralysis only

Age Groups	*Social Classes*	*Fatality Rates*	*Trends*
Under 10	I and II	9·4%	
	III	8·4%	
	IV	10·7%	Negligible
	V	7·9%	
10–19	I and II	22·0%	
	III	11·1%	Significant
	IV and V	3·7%	
20–	I and II	29·3%	
	III	20·3%	Negligible
	IV and V	16·2%	
All Ages	I and II	17·9%	
	III	10·1%	
	IV	10·4%	Negligible
	V	7·4%	

In the assessment of the trend at all ages in the above table, allowance has been made for variations, with age, in the social class composition of the patients. Both poliomyelitis with paralysis and " not poliomyelitis," however, showed these suggestive if not significant trends towards greater lethality in the upper social classes.

Finally, in spite of the finding of some very significant differences in social class distributions, splitting of the data by social class has not been continued as a routine in later tables. The advisability of dividing into social classes has been kept in mind for the study of specific questions.

13. ASSOCIATED CASES

(*a*) **General.** In section 9 of the summary card (Appendix I) inquiry was made of the presumed means of infection. This part of the section was rarely completed, and scrutiny of the completed records has not revealed that information of value is likely to have been lost by not making further reference to the subject here.

The second part of section 9 provided for information on associated cases. Tables derived from this part of the section are reproduced as Tables 17 and 17A. In this instance, as it was possible for any notification to lack associated cases, there was no internal evidence of the completeness or otherwise of the recording of data.

(*b*) **Associated cases and type of illness.** The crude data (for all ages) are to be found in the bottom line of Table 17A. In the first place, the number of notifications with three or more associated cases was too small to merit separate study; there were, in all, 25 such notifications, 11 being of poliomyelitis without paralysis and 14 of poliomyelitis with paralysis. These notifications have been combined with those having two associated cases, to give composite groups as shown in the tables, with two or more associated cases. There is presumptive evidence of poliomyelitis having been associated with other cases; this will be expanded in (*c*) below.

(*c*) **Associated cases, type of illness and age groups.** Each type of illness was first examined, in age groups, to determine whether the distribution of associated cases was uniform throughout the age groups. The one significantly non-uniform distribution was in poliomyelitis with paralysis. There was not a significant trend with age; the deviations from uniformity were rather the result of unusually large fluctuations (perhaps random) from the overall proportions of associated cases. The following table has been taken from the work sheets.

TABLE M

Poliomyelitis with paralysis only

Age Groups	*One associated case*	*Two or more associated cases*
Under 2	12·8%	1·7%
2–3	12·9%	4·3%
4–9	16·4%	5·7%
10–19	14·1%	1·6%
20–	9·9%	6·8%
All Ages	13·5%	3·9%

The age grouping of the above table had to differ from that of Table 17A in order to obtain statistically satisfactory comparisons.

The distributions of associated cases were next compared between illness types, in selected age groups. The two types of poliomyelitis were found to have consistent distributions of associated cases, apart from the age group 10–14 where patients without paralysis had, surprisingly and significantly, a slight relative excess of associated cases. Table 17A shows this excess. Taking the distribution as a whole, and allowing for variations in age composition of the patients with the two types of illness, the observed differences in the proportions of associated cases were not significant.

This enabled all poliomyelitis cases to be contrasted with all cases not finally accepted as poliomyelitis. The results were the finding of very highly significant differences in almost all age groups, and over all ages, the tendency always being towards an association between poliomyelitis and the recording of associated cases.

(*d*) **Associated cases and fatality rates.** It has not been found that any of the three types of illness had its fatality rate affected by the presence or absence of associated cases.

Lastly, the numbers of notifications in which associated cases were recorded were relatively so small that it has not been considered profitable to continue to sub-divide later tables by numbers of associated cases.

14. DISTRIBUTIONS IN TIME

(*a*) **General.** The dates considered in this section were all dates of onset of illness. The total number of cases in which this date was unstated was 11, or 0·5 per cent. of all notified cases included in this survey ; such a low figure is considered very satisfactory. The basic information is contained in Tables 18 and 18A in which the dates of onset have been classified in seven calendar months from June, 1947, onwards.

(*b*) **Dates of onset, types of illness and age groups.** In the first place, the distributions of months of onset for each type of illness were studied by age groups. Poliomyelitis with paralysis did not show any variations between age groups which could not easily be attributed to chance. Variations between age groups in patients suffering from poliomyelitis without paralysis were also not of significance. In notified cases not finally accepted as poliomyelitis, however, there were significant differences in the time distributions between different age groups. The percentages given in Table 18A show these variations ; the significant deviations from the distribution at all ages were concentrated in the month of August, when there was a relatively high incidence of this type of illness in children under 5 and a relatively low incidence at ages over 15.

Because of these findings it was possible to compare the time distributions of poliomyelitis with paralysis and poliomyelitis without paralysis at all ages. They differed most significantly ; comparison of the percentage distributions in Table 18A confirms that the outstanding differences were the excesses of paralytic cases in June and July, early in the outbreak, and an excess of non-paralytic cases in September which, although not marking the end of the outbreak, was slightly past the peak. This last excess did not continue into the later months.

Any comparisons between time distributions of accepted cases and non-accepted cases had to be made by age groups, in view of the lack of uniformity in the " not poliomyelitis " distributions, already described. Comparing poliomyelitis with paralysis and " not poliomyelitis," the time distributions differed most significantly. The significance of the differences was attributable in the main to very significant differences at ages under 5 ; in this age group there was an excess of paralytic cases in June and July, compensated by an excess of non-accepted notifications (" not poliomyelitis ") in all later months. Later age groups showed similar, though less significant differences up to age 20. Beyond age 20 there was no significant difference between the time distributions of the two types of illness. The differences are reflected in the percentages tabulated in Table 18A.

Similar age-specific comparisons between poliomyelitis without paralysis and " not poliomyelitis " revealed a highly significant difference in time distribution. In detail the differences did not follow precisely the pattern of the preceding comparison. At ages under 5 and over 20 there was no difference which could not easily be attributed to chance. Significant differences in intermediate age groups were attributable, at ages 5–9, to a deficiency in rejected (" not poliomyelitis ") cases in September with a slight excess in other months, especially December ; and, at ages 10–19, to an excess of rejected cases in November and December.

To summarise the two preceding paragraphs, neither type of poliomyelitis differed in its time distribution from " not poliomyelitis " at ages over 20. In patients under 5, paralytic poliomyelitis prevailed in the first two months of the outbreak, a lesser but similar trend continuing through school and early adolescent life. Non-paralytic cases were relatively frequent in September at ages 5–9 and relatively rare in November and December at ages 10–19.

(*c*) **Dates of onset and fatality rates.** The fatality rate of poliomyelitis with paralysis and that of cases not finally accepted did not vary significantly according to the date of onset of the disease.

Finally, it was decided not to continue subdivision of the data by months of onset, when making later tables. The possibility of doing so has been kept in mind for some tables on limited specific aspects of the data.

15. INTERVAL TO DEVELOPMENT OF FEVER

(*a*) **General.** Of all cases in the survey, 283 (14·1 per cent.) were apparently afebrile. In addition, in 760 cases (38 per cent. of the total) the interval between onset of disease and onset of fever could not be stated precisely—sometimes because of doubt about the exact times of onset, sometimes, no doubt, because of the lack of opportunity of taking temperatures in the first stages of ill-health. It is conceivable that in some patients pyrexia had been observed to precede the onset of clinical illness, in which case there might have been some negative intervals. No such case was recorded in the present series.

(*b*) **Interval and type of illness.** It need only be mentioned here that again the " not poliomyelitis " cases had the largest proportion of unstated intervals, namely 259 or 41·4 per cent. of their total as against 501 or 36·4 per cent. of the total of cases finally accepted as poliomyelitis. The difference between the stated percentages is significant.

(*c*) **Interval, type of illness and age groups.** The data are given in Tables 19 and 19A. Poliomyelitis without paralysis had a uniform distribution of intervals throughout the age groups ; poliomyelitis with paralysis had a distribution which departed significantly from uniformity. In the latter type of illness, younger patients had, on the whole, shorter intervals. This is apparent in Table 19A, and can be expressed even more simply by stating that the mean intervals were, at ages under 5, 1·02 days ; at ages 5–14, 1·07 days ; and at ages over 15, 1·33 days, these means all being for cases of poliomyelitis with paralysis. Cases not accepted as poliomyelitis also showed a significant departure from uniformity in the interval-age group distributions, but the trend was by no means the same as in cases of poliomyelitis with paralysis, the mean intervals being as follows : ages under 5, 1·25 days ; ages 5–14, 0·85 days ; and ages over 15, 1·21 days.

Comparison of age-specific distributions of intervals, between the two types of poliomyelitis, did not reveal any differences of significance. The two types were therefore combined, for similar comparisons with " not poliomyelitis " which again did not show any significant differences. Thus, although two types of illness had some significant deviations, specific for age, from their general mean intervals, the age and interval distributions were, as a whole, uniform and did not show significant selection.

(*d*) **Interval and fatality rates.** The length of the interval, when stated, did not have a significant effect on the fatality rate of any of the three main types of illness. As is apparent in Table 19, there was no death in the 45 cases of poliomyelitis with paralysis but without recorded fever. The contrast between this *nil* rate and the rate of 11 per cent. in febrile cases with stated intervals is highly significant.

Finally, it has been decided not to continue to classify the data by intervals between onset of illness and onset of fever, because the distributions have on the whole been uniform throughout the data in the survey.

16. INTERVAL TO ONSET OF PARALYSIS

(*a*) **General.** The information on this interval was, in the main, limited to cases of poliomyelitis with paralysis. Reference will be made in subsection (*c*) below, to a few other cases. In 62 instances (5·9 per cent. of all cases of poliomyelitis with paralysis) the interval was unstated, usually because of doubt of the precise time of onset of illness. The data are tabulated in Table 20.

(*b*) **Interval and age groups.** When studied by age groups, the distribution of intervals was found to be essentially uniform and not to show significant deviations from the distribution at all ages, which had a mean interval of approximately 4·73 days.

(*c*) **Interval and type of illness.** As mentioned in subsection (*a*) above, an interval was stated for a few patients whose final diagnosis was not poliomyelitis. The numbers, being too small for an Appendix table, are given below for all ages.

TABLE N

Cases with final diagnosis " not poliomyelitis "
Intervals between onset of illness and onset of paralysis

Interval in Completed Days	*Number of Cases*
Under 1	15
1	2
2	2
3	4
4	2
5–9	7
10 or more	2
All Intervals	34

The above distribution was, after some necessary compression, contrasted with that of cases of poliomyelitis with paralysis from which it was found to differ very significantly. The " not poliomyelitis " intervals were on the whole shorter than those of poliomyelitis with paralysis, a fact reflected in their relatively small mean interval of 3·38 days.

(*d*) **Interval and fatality rates.** All cases with stated intervals (Table 20) had a fatality rate of 10·96 per cent. There were some fluctuations in the fatality rate according to the lengths of interval—in brief, (under 1 day) 11·93 per cent., (1 day) 16·36 per cent., (2 days) 10·90 per cent., (3 days) 15·23 per cent., (4 days) 6·6 per cent., (5–9 days) 7·5 per cent. and (10 or more days) 11·5 per cent. The deviations from the overall average did not attain significance.

The distribution of intervals has been shown to be almost uniform ; and further, as this criterion has been applicable almost exclusively to cases of poliomyelitis with paralysis and not to the other types of illness included in the survey, it was decided not to subdivide further tables according to intervals between onset of illness and onset of paralysis.

17. INTERVAL TO NOTIFICATION AS POLIOMYELITIS

(*a*) **General.** This interval was recorded in 98·6 per cent. of all cases. The summary card contained a heading for other notifications (Appendix I, heading 10 (v)) and some patients arrived at a final diagnosis of poliomyelitis after an original notification as a case of another disease. This procedure occasionally delayed the correct notification, but scrutiny of the original cards has not shown it to be a delaying factor of importance.

(*b*) **Interval and type of illness.** The crude data, at all ages, appear at the bottom of Tables 21 and 21A. Poliomyelitis without paralysis had a mean interval of 5·05 days, poliomyelitis with paralysis a mean of 6·38 days and " not poliomyelitis " a mean of 4·51 days. The significance of the difference is discussed below.

(*c*) **Interval, type of illness and age groups.** The distributions of intervals, by age groups, for each type of illness were first of all examined. It was found that within each of the three types of illness the distribution was uniform. Owing to this, the distribution of all ages could be compared directly. First of all, poliomyelitis without paralysis was compared with poliomyelitis with paralysis, and the difference (see (*b*) above) found to be very highly significant. Very significant differences were also found between " not poliomyelitis " and the two types of poliomyelitis.

(*d*) **Interval and fatality rates.** The associations of interest are tabulated below.

TABLE P

Intervals to Notification	Fatality Rates	
	Poliomyelitis with Paralysis	Not Poliomyelitis
Under 2 days	13·59%	3·67%
2 or 3 ,, ...	16·04%	6·12%
4 or 5 ,, ...	10·38%	3·60%
6 or 7 ,, ...	8·23%	6·0 %
8 or 9 ,, ...	4·55%	11·1 %
10–14 ,, ...	6·96%	16·2 %
Over 15 ,, ...	9·09%	23·3 %
All (stated)	11·09%	6·45%

The above fatality rates for poliomyelitis with paralysis depart significantly from uniformity ; it will be seen that the longer the interval between onset of illness and notification as poliomyelitis, the better the prognosis *qua* recovery. The reverse trend was very significantly shown by cases not finally accepted as poliomyelitis : in these, later notification tended to be associated with a much higher fatality rate.

In view of these significant differences, the fatality rates were calculated for three age groups (the figures being rather too small for finer subdivision), and subdivided according to whether the interval was below or above the most likely interval to reveal changes in the outcome of the illness ; for poliomyelitis with paralysis, this was taken as four days, for " not poliomyelitis " six days. The results were as follows :—

TABLE Q

Age Group	Fatality Rates			
	Poliomyelitis with Paralysis		Not Poliomyelitis	
	Under 4 Days Interval	4+ Days Interval	Under 6 Days Interval	6+ Days Interval
Under 5	9·78%	4·50%	5·70%	14·6%
5–14	13·08%	9·66%	3·43%	2·9%
15–	31·7 %	15·17%	4·20%	18·0%

The differences between age-specific fatality rates in poliomyelitis with paralysis, contrasting patients with intervals of less than four days and patients with intervals of four or more days, were significant at ages 5 and 15 or more, but not at ages 5–14. The differences in fatality rates of " not poliomyelitis " were suggestive but not significant at ages under 5, not significant at ages 5–14 and highly significant at ages 15 or more. Both distributions of fatality rates, in short, failed to show the expected differences in the age group 5–14.

18. INTERVAL TO REMOVAL TO HOSPITAL

(*a*) **General.** Inspection of the summary records showed that removal of the patient to hospital occurred, with negligible exceptions, either on the day of notification or on the following day. The records have been tabulated in a similar fashion to Tables 21 and 21A; in general, the tables have been found very similar to those giving the intervals to notification. They have therefore not been reproduced here.

Some patients had been removed to hospital because of notification as cases of some other notifiable disease. Of these, by far the commonest was cerebrospinal fever.

19. DURATION OF STAY IN I.D. HOSPITAL

(*a*) **General.** The length of stay in hospital was recorded for all patients admitted; in general it was obtained from headings 10 (vi) and 10 (vii) or 10 (viii) of the summary record (Appendix I) though in a few cases, when the patient had died within less than a day of admission, the length of stay in hours or minutes was recorded. The basic data are contained in Table 22. Cursory inspection of this table shows, as might be expected, that deaths tended to occur mostly in the first ten days of hospital treatment. Table 22A, in which percentage distributions have been given for all admitted patients, has therefore been biassed to some extent by these early deaths and has accordingly been supplemented by Table 22B which deals with patients leaving hospital alive. As the classification of durations of stay in hospital, in Table 22, is rather coarse when considering early deaths, Table 23 has been added to show in more detail deaths occurring within less than ten days of admission to hospital.

19A. DURATION OF STAY—RECOVERIES

(*a*) **Duration of stay, age groups and types of illness.** The mean durations, derived from Table 22, were as follows.

TABLE R

Mean durations of stay in hospital (recoveries only)

Age Group	Non-paralytic Poliomyelitis	Paralytic Poliomyelitis	Not Poliomyelitis
Under 1 ...	...	44·8 days	...
1	...	46·8 ,,	...
2	...	43·5 ,,	...
3	...	48·5 ,,	...
4	...	41·8 ,,	...
Under 5 ...	29·2 days	45·5 ,,	16·4 days
5–9	27·6 ,,	39·7 ,,	28·3 ,,
10–14 ...	25·7 ,,	38·0 ,,	19·8 ,,
15–19 ...	26·4 ,,	38·4 ,,	15·7 ,,
20–29 ...	26·3 ,,	42·7 ,,	13·6 ,,
30– ...	25·6 ,,	32·9 ,,	18·0 ,,
All Ages ...	27·2 ,,	42·2 ,,	19·1 ,,

In each of the three types of illness, the distribution of durations by age groups was examined; these distributions were essentially uniform in non-paralytic poliomyelitis and "not poliomyelitis," but deviated significantly from uniformity in paralytic poliomyelitis. The nature of the deviations is sufficiently shown by Table 22B and Table R above.

The differences between the durations of stay in hospital of patients with the three types of illness were great.

19B. DURATION OF STAY—DEATHS

(*a*) **Duration of stay, age groups and types of illness.** The data are given in Tables 22 and 23. Patients with non-paralytic poliomyelitis suffered only four deaths, the mean stay in hospital being 6·7 days in these four cases. Patients dying from paralytic poliomyelitis were in hospital on the average 7·8 days before death, while those dying from diseases other than poliomyelitis were, on the average, 11·6 days in hospital. Comparison of the distributions for these two types of illness showed that the difference in durations of stay was very significant. The absolute numbers did not allow of detailed comparisons by age groups.

20A. DEGREE OF PARALYSIS AT MAXIMUM

(*a*) **General.** Table 24, giving the distribution, shows immediately that slight paralysis was non-fatal and moderate paralysis little fatal. The table has been examined to find whether the distribution is uniform ; it departs very significantly from uniformity. Under the age of 5, infants under 1 year had a slight excess of moderate cases, children of 1 year an excess of mild cases, children of 2 years an excess of moderate cases and children of 3 or 4 years an excess of mild cases. Patients ages 10–14 had a slight excess of mild and of moderate cases. At ages over 15 the excesses were all in the group classified as severe.

20B. DEGREE OF PARALYSIS ON LEAVING I.D. HOSPITAL

(*a*) **General.** The data are given in Table 25. The distribution in this table is significantly non-uniform, patients under 3 tending to have an excess of mild degrees of paralysis, those of 3 an excess without paralysis or with moderate paralysis and those of 4 an excess of mild paralysis. Patients ages 5–9 had an excess of mild paralysis. Patients aged 15–29 had an excess of severe paralysis. Those aged 30 or more left hospital without paralysis in an unexpectedly large number.

The improvement which occurred in the degree of paralysis between its peak and the time when patients were discharged from I.D. hospitals is reflected in the following percentages, which relate to patients who survived until discharge :

	Degree of Paralysis			
	None	*Slight*	*Moderate*	*Severe*
At maximum ...	...	27·0%	39·9%	33·1%
On discharge ...	18·2%	34·6%	26·6%	20·6%

21A. LOCATION OF PARALYSIS AT MAXIMUM

(*a*) **General.** Reference to Appendix I (heading 11B) shows that locations were entered under six anatomical headings. It was requested that phrenic paralysis should be entered as upper cervical. Multiple entries were numerous, and the possible combinations of entries very numerous. In preparing Table 26 it was decided to restrict the data for the sake of clarity.

The table therefore shows only cases in which a selected location was affected in isolation, and cases in which this location was associated with any others. Of 1,046 patients with stated locations, 647 (61·9 per cent.) had only one location affected. The 399 patients with multiple locations had, in all, 1,123 locations stated, an average of 2·8 locations per patient in this group. While it was common enough to find adjacent locations affected together, this was not always found.

In some degree, the upper part of Table 26 shows the intrinsic fatality rate of the disease when confined to one stated location. In addition it shows the distribution of single locations by age groups.

(*b*) **Locations and age groups.** The distribution of single locations by age groups was uniform, as was the distribution of multiple locations (in the stated categories, realising the limitation of the classification used). The respective percentage distributions at all ages were as in the following table.

TABLE S

Single Locations	*Per cent.*	*Multiple Locations*	*Per cent.*
Cerebral	5·1	C. + others	3·5
Bulbar	18·7	B. + others	12·4
Upper Cervical	2·9	U. C. + others	12·0
Lower Cervical	17·5	L. C. + others	23·3
Thoracic	1·5	T. + others	19·9
Lumbar or Sacral ...	54·3	L. or S. + others ...	28·9
Total, single ...	100·0	Total, multiple ...	100·0

Single locations tended to occur more in the upper or lower divisions of the central nervous system.

(*c*) **Locations, age groups and fatality rates.** The age-specific fatality rates for single locations could not be calculated separately, in general, because of small absolute numbers. In bulbar locations (singly), there was a higher—but not significantly higher—fatality rate in patients over the age of 10. Cerebral and bulbar locations were associated with nearly all the deaths in patients with single locations.

The deaths of patients with multiple locations could be examined by age groups and an occasional formally significant difference detected (e.g. in patients with lumbar or sacral plus other locations) but on the whole there was a lack of significant association between age and fatality rate, for specified locations. The fatality rate intrinsic to any one (single) location was always lower than the rate associated with that location in combination with others—significantly, in all locations except thoracic. This applied even to bulbar locations, with their high relative fatality rate when found in isolation ; and the deduction is warranted that the mere extent of lesion in the central nervous system was a factor of weight in determining the outcome of the illness.

21B. LOCATION OF PARALYSIS ON LEAVING I.D. HOSPITAL

(*a*) **General.** Table 27 carries the data under headings similar to those of Table 26. Of 761 patients who left infectious diseases hospitals with lesions of stated location, 575 (75·6 per cent.) had only one location affected. The 186 patients who left hospital with multiple locations had each, on the average, 2·6 affected locations.

(*b*) **Locations and age groups.** The distribution of single locations by age was essentially uniform, as was that of multiple locations (allowing for the limitation of the classification used). Survivors were compared, by age groups, as to localisation of the lesions at maximum and on discharge from their first hospital. The first comparison was restricted to patients with single location entries : it was found that almost all such survivors retained their original location of lesion on leaving hospital. The proportions were so high that it is not considered worth while reproducing the whole table ; it may be mentioned that a single location on discharge might represent the residue of a multiple location at maximum, so occasionally the expected reduction in single locations was replaced by an increase of the number. The reduction in number of single locations, between maximum and time of discharge from hospital, was only 5·4 per cent. taken over all ages and locations.

The reduction in multiple locations, on the other hand, between the time of maximum paralysis and the time of discharge from hospital, was considerable ; it is shown in the following table.

TABLE T

Percentage reductions in certain multiple locations of lesions on discharge from I.D. hospital as compared with time of maximum paralysis (Recoveries only)

Locations	Reductions per cent. by Age Groups				
	–5	5–9	10–14	15–	All Ages
Cerebral + others ...	(100)	(75)	(100)	(100)	94
Bulbar + others ...	71·8	83	67	74	73·9
Upper Cervical + others	56·7	47	27	30·4	43·4
Lower Cervical + others	45·7	44·4	36·4	30·4	39·9
Thoracic + others ...	50·7	30·3	29·2	25·0	37·1
Lumbar or Sacral + others	48·7	36·9	30·0	23·5	37·7
All multiple locations ...	52·4	44·9	36·6	32·4	43·6

Two trends are obvious in the above table—(*a*) greater reductions in multiple locations including one high up in the central nervous system and (*b*) greater reductions in younger patients. Even so, some 761 patients left their first hospital with persistence of lesions in some part or parts of the central nervous system.

22. USE OF MECHANICAL RESPIRATORS

(*a*) **General.** The period of time during which any patient received treatment in a mechanical respirator was recorded under heading 12 of the summary record card. Ten patients who survived their immediate illness appeared likely to spend a prolonged time in a respirator ; the length of time spent in the respirator could not be observed indefinitely and, when over 100 days, has been taken as 100 days.

It was considered unnecessary to prepare an appendix table on the patients treated in respirators : certain data are tabulated below.

TABLE U

Cases treated in mechanical respirators

Age Group	Males		Females		Completed Days in Respirator		Per cent. of Cases of Paralytic Poliomyelitis
	Cases	D.	Cases	D.	Recoveries	Deaths	
–1	3	2	3	3	0	22	7·1
1	4	2	1	–	28	7	3·1
2	2	1	1	–	200	2	2·7
3	3	–	2	–	82	...	5·2
4	1	–	–	–	100	...	1·9
5–9	14	9	9	9	47	35	12·1
10–14	6	3	5	2	349	196	9·0
15–19	4	3	4	2	121	6	11·6
20–29	9	6	13	9	487	211	26·2
30–	6	6	6	5	100	181	15·6
All Ages	52	32	44	30	1,514	660	9·2
			Mean ...		44·5%	10·6%	
			S. E. of Mean		7·3%	3·4%	

The proportion of males with paralytic poliomyelitis who required respirator treatment was 8·8 per cent., and of females 9·6 per cent.; these proportions did not differ significantly. The numbers of days spent in respirators varied within a wide range; the first three days of treatment included 49 of the 62 fatal cases.

(*b*) **Associations with other factors.** Age was a factor of the greatest importance in determining whether a patient had to have treatment in a respirator. This is sufficiently shown by the last column of Table U above. Twelve patients treated in respirators had a history of previous illness as defined in section 7 (*a*) above; eight of these twelve cases were fatal. There was no significant difference between the incidence rate of previous illnesses in respirator-treated patients and other patients with paralytic poliomyelitis.

The home environment of respirator-treated patients, by apartments, was—(one apartment), 2; (two apartments), 15; (three apartments), 26; (four apartments), 24; (five or more apartments), 28 cases. This distribution differed significantly from that of other cases of poliomyelitis with paralysis, the respirator-treated cases being drawn selectively from houses of four or more apartments. Judged by occupants, respirator-treated patients came from the following households—(less than three occupants), 2; (three occupants), 25; (four occupants), 22; (five occupants), 19; (six occupants), 11; (seven or eight occupants), 8; (nine or more occupants), 8; (unstated), 1. This distribution differed suggestively, though not with technical significance, from that of the residue of cases of poliomyelitis with paralysis, in that it showed a slight excess of respirator-treated cases in households of less than four occupants.

The sanitary condition of the home in respirator-treated patients was good in 71 cases, fair in 16 and bad in 8. Contrasting, as before, with other cases of paralytic poliomyelitis, a very significant excess of respirator-treated patients came from homes with good sanitary conditions. The social class of the chief wage-earner, in respirator-treated patients was—(classes I and II), 34; (class III), 38; (class IV), 17; (class V), 6; (unstated), 1. Respirator-treated patients were, most significantly, selected from social classes I and II.

Associated cases were recorded as follows: (one associated case), 13; (two cases), 4; (three cases), 1. The proportions of cases, needing respirator treatment, associated or not associated with others did not differ from the proportions found in other cases of poliomyelitis with paralysis.

The months of onset of illness of patients treated in respirators were—(June), 2; (July), 6; (August), 34; (September), 33; (October), 10; (November), 10; (December), 1. The distribution in time did not differ significantly from that of other cases of poliomyelitis with paralysis. Intervals between onset of illness and onset of fever, and intervals to development of paralysis did not differ significantly in their distributions from those of the residue of cases of paralytic poliomyelitis. The distribution of intervals between onset of illness and notification was—(under 2 days), 10; (2–3 days), 37; (4–5 days), 23; (6–7 days), 14; (8–9 days), 3; (10–14 days), 5; (15 or more days), 2; (unstated), 2. This distribution differed significantly from that of other cases of paralytic poliomyelitis. It had a mean of 4·88 days as against a mean of 6·72 days for other cases, the difference being mainly attributable to an excess of respirator-treated patients with intevals of 2–5 days.

In respirator-treated patients, the degree of paralysis at maximum was slight in 2, moderate in 2 and severe in 92. The association with severe paralysis was very significant. The location of the lesion, including single and multiple entries, was—(cerebral), 11; (bulbar), 53; (upper cervical), 66; (lower cervical), 64; (thoracic), 55; (lumbar or sacral), 56. This distribution differed very significantly, and, as expected, from that of other cases of paralytic poliomyelitis, respirator-treated cases being in excess in bulbar, upper cervical and thoracic locations.

Two patients treated in respirators had an associated pregnancy. Their cases will be tabulated in a later section.

(*c*) **Fatality rates.** Patients who needed treatment in a respirator had a fatality rate of 64·6 per cent. which, of course, was relatively very high. It was not found that the fatality rate of respirator-treated patients was significantly affected by any of the factors detailed in subsection (*b*) above, with the following exception. The fatality rate associated with cerebral and/or bulbar location of lesion was significantly high.

Of 62 deaths of patients treated in respirators, 49 occurred in the first three days of such treatment. This very significant finding is in accordance with what might be expected from general medical knowledge.

23. NEEDS FOR ORTHOPÆDIC TREATMENT

(*a*) **General.** The degree and location of residual paralysis, on discharge from I.D. hospital, have already been described. Time did not permit of the following of every patient to find how much and how long orthopædic treatment would in fact be given ; a rough estimate of time was asked for under heading 12 of the summary record card, and the entries have been classified in Table 28. Some weeks' treatment would be needed by 9·4 per cent. of survivors of an attack of paralytic poliomyelitis, and some months' treatment by another 54·9 per cent. Of this last figure some part, not precisely known, would be contributed by those patients who would need orthopædic care for years. The proportion of survivors who would need short or prolonged orthopædic treatment did not vary significantly with age.

24. POLIOMYELITIS AND PREGNANCY

The following extracts give salient points from the case summaries of the 14 patients in whom pregnancy co-existed with poliomyelitis.

TABLE Y

Poliomyelitis cases associated with pregnancy

(1) Age 23 ; non-paralytic poliomyelitis ; 7½ months pregnancy. Recovery after 34 days in hospital.

(2) Age 24 ; non-paralytic poliomyelitis ; 9 months pregnancy. Recovery after 13 days in hospital.

(3) Age 22 ; paralytic poliomyelitis, severe, upper cervical and lumbar/sacral ; 4 months pregnant ; in mechanical respirator for 6 and then 43 days ; discharged after 132 days in hospital, with severe lumbar/sacral paralysis, to an orthopædic hospital.

(4) Age 22 ; paralytic poliomyelitis ; severe paralysis, upper cervical and below ; full-term pregnancy, labour commencing ; healthy child delivered by Cæsarean section on admission ; patient in mechanical respirator since operation ; after over 100 days, still in respirator in hospital with severe paralysis, upper cervical and below.

(5) Age 27 ; paralytic poliomyelitis, moderate lumbar/sacral ; 2 months pregnant ; discharged after 52 days in hospital with moderate lumbar/sacral paralysis, orthopædic treatment needed for months.

(6) Age 28 ; paralytic poliomyelitis, moderate lumbar/sacral ; 4 months pregnant ; discharged after 27 days in hospital with slight lumbar/sacral paralysis, orthopædic treatment needed for unstated period.

(7) Age 28 ; paralytic poliomyelitis, severe lower cervical ; pregnant, duration unstated ; discharged after 8 days in hospital with moderate lumbar/sacral paralysis, to an orthopædic hospital.

(8) Age 33 ; paralytic poliomyelitis, severe lower cervical and below ; 3 months pregnant ; aborted after 4 days in hospital ; discharged after 79 days in hospital with moderate paralysis, thoracic and lumbar/sacral ; orthopædic treatment needed for 6 months.

(9) Age 35; paralytic poliomyelitis, severe thoracic and lumbar/sacral; 5 months pregnant; discharged after 26 days in hospital, paralysis unstated, to an orthopædic hospital.

(10) Age 36; paralytic poliomyelitis, severe upper cervical and below; 4 months pregnant; discharged after 66 days in hospital with severe residual paralysis, same locations, to a nursing home. Cæsarean section later. Orthopædic treatment needed for months.

(11) Age 27; paralytic poliomyelitis, severe bulbar; 7 months pregnant; died after 3 days in hospital.

(12) Age 30; paralytic poliomyelitis, severe upper cervical, thoracic and lumbar/sacral; 2 months pregnant; died after 80 days in hospital.

(13) Age 31; paralytic poliomyelitis, severe bulbar; 7 months pregnant; not admitted to hospital; found dead 5 days after onset of febrile illness. Diagnosis at autopsy.

(14) Age 34; paralytic poliomyelitis, severe, all locations except upper cervical; 8 months pregnant; in respirator for a few minutes before death on day of admission to hospital.

In comment on this table, reference may first be made to Table 3 which shows two rejected notifications in pregnant women. These were the only other cases in which pregnancy had been recorded. On the basis of these data and those of Table 6, the experience of women of 15–50 can be summarised thus :—

		Pregnant	
Type of Illness	*Cases*	*Number*	*Per cent.*
Non-paralytic poliomyelitis	38	2	5·3
Paralytic poliomyelitis ...	116	12	10·3
Not poliomyelitis ...	111	2	1·8

The association between poliomyelitis and pregnancy in the above data was significant.

25. POST-MORTEM FINDINGS

A considerable number of autopsies was performed. Review of the summary cards has not, in general, shown data which could profitably be reproduced in this survey. Of the 62 patients who died after treatment in respirators (and who had, presumably, on the whole the gravest infections), 22 had some post-mortem findings entered in the summary.

It is scarcely necessary to reproduce summaries of post-mortem findings such as " changes typical of poliomyelitis." The following seven post-mortem summaries have been selected because they have differed in some respect from the typical, uncomplicated findings.

TABLE Z

Post-mortem findings in selected cases

(1) (Age 3 months; paralytic poliomyelitis, clinically severe, bulbar, upper and lower cervical and lumbar/sacral; died after 7 days illness, on day of admission to hospital, after less than 1 day in respirator.) " Brain congestion. Severe damage in lumbar region of spinal cord, less severe damage in thoracic region. Thymus much enlarged."

(2) (Age 2½ years; paralytic poliomyelitis, clinically severe, bulbar and all lower locations; died after 4 days illness, 2 last days in respirator.) " Acute anterior poliomyelitis. Bronchitis and early broncho-pneumonia. Lymphoid hyperplasia."

(3) (Age 6 years; paralytic poliomyelitis, clinically severe, cerebral, bulbar, upper cervical and thoracic; died after 5 days illness, last day in respirator.) " Enlarged thymus. Lower cervical and upper thoracic cord necrotic."

(4) (Age 25 years; paralytic poliomyelitis, clinically severe bulbar; died after 13 days illness, last 2 days in respirator.) " Poliomyelitis. Acute purulent bronchitis. Congestion and œdema of lungs. Hyperplasia of thyroid. Toxic changes in all organs. Supparative right maxillary sinusitis. Phlebitis."

(5) (Case 12 of Table Y; died after 70 days in respirator.) " Collapse of left lung with broncho-pneumonia. Pregnancy. Right Hydro-ureter."

(6) (Case 13 of Table Y.) " Ordinary post-mortem examination showed severe toxic damage but no cause for the sudden death. Microscopic section of the medulla showed changes characteristic of acute poliomyelitis of the bulbar type. The toxic changes found in other organs were in accordance with this."

(7) (Age 47 years; paralytic poliomyelitis, clinically severe, lower cervical, thoracic and lumbar/sacral; died 7 days after onset of illness, last 2 days in respirator.) " Acute anterior poliomyelitis. Chronic pulmonary tuberculosis. Silicosis and anthracosis. Emphysema. Congestion and cyanosis of all organs."

While such findings cannot be described as new, they help to emphasise the knowledge that poliomyelitis may co-exist with other conditions and that the patient's resistance, once overcome by the poliomyelitis virus, may be unable to cope with secondary infections.

26. DISCUSSION

(*a*) **General.** Poliomyelitis is not, like diphtheria, a disease in which confirmatory evidence of infection can be obtained by relatively simple laboratory techniques. In 1947, indeed, hopes of recovery or transmission of the specific virus from any individual case in Scotland were almost *nil.* This technical difficulty may not be important in the frank paralytic case, but it makes the precise differential diagnosis of non-paralytic poliomyelitis difficult and sometimes impossible. The behaviour of the disease, therefore, must to a considerable extent be studied by the assessment of indirect circumstantial evidence which inevitably lacks the bacteriological confirmation so readily obtained when studying many other infections. If a reason has to be adduced for the body of evidence presented in preceding sections of this survey (apart from any intrinsic interest) it must lie, in the main, in the need for the use of indirect methods.

(*b*) **Types of illness.** It would be pointless to study paralytic poliomyelitis in isolation. Some check on the behaviour of the paralytic type is provided by the behaviour of its non-paralytic analogue. Yet these are forms of the same disease and it must be conceded that they might be epidemiologically identical, the paralytic manifestation depending on the purely individual reaction of the host to an unchanging parasite. No doubt this is largely true. The search for some " control " infection was carefully considered in the early stages of this survey and, as already mentioned (section 3), ended in the decision to use for contrast the rejected notifications.

The comparison group of rejected notifications was itself selected from the general population. It would have been completely satisfying, had it been possible to add for the purpose of contrast an unbiassed sample of the general population, not notified as suffering from poliomyelitis. Such a sample was not, however, available and could not be provided, complete with documentation on details such as social class of chief wage-earner, sanitary condition of the home, etc. It is for consideration how far the contrast group of rejected notifications met the requirements.

It will have been obvious that in some ways rejected notifications were not completely representative of the non-notified population: the age distribution, for instance, showed a peak at ages under 5 and a slight peak at ages over 30. In this respect it showed some of the characteristics of the distribution of accepted notifications. Indeed, it is in these intermediate properties that some virtue may be found in the use of rejected notifications for contrast purposes. They might be expected, in general, to lie somewhere between accepted notifications and the residue of non-notified persons. The contrasts between accepted and rejected notifications should therefore be less intense than those that could be expected between accepted notifications and the non-notified residue of the population. If, as has been found in this survey, significant differences have been discovered between the characteristics of accepted and rejected notifications, it is reasonable to assume that comparisons between accepted notifications and the non-notified residue—had they been possible—would have yielded differences of at least equal significance.

Insofar as notifications go, this survey is regarded as nearly a complete record of seven months' experience in Scotland covering the largest recorded incidence of the disease in any one outbreak. It is recognised that the proportion of non-paralytic cases notified was probably much less than it would have been, had there been a technique for the confirmation of infection in ambulant or mildly febrile patients with no clinical trace of paralysis. Perhaps on this account the non-paralytic cases included in the survey were, on average, those with the more serious degrees of non-paralytic infection, and were therefore not a true sample of poliomyelitis without paralysis. The question cannot be directly answered, but at least it may be stated that the notified non-paralytic cases did, in fact, differ significantly in many of their associations from the notified paralytic cases, so if they were drawn from the deeper layers of non-paralytic infections one might expect a truer sample, with a higher proportion of less severe (but still non-paralytic) infections, to show even more significant differences. In short, any selective process has probably lessened rather than heightened the discrepancies revealed between paralytic and non-paralytic types of the disease.

(*c*) **Age.** Whatever other factors be contributory, the primary importance of age in determining incidence and fatality rates remains. The age distribution of the cases included in this survey differed significantly from that of previous years above median incidence, and even more from that of previous years below median incidence. The nature of the change in 1947 was a selective increase in persons of 15 and over and can be seen at once in the following short table :—

	Under 1	1–4	5–14	15–	*All Ages*
Previous years of higher incidence	5·0%	43·9%	37·8%	13·2%	99·9%
1947 (June–December)	6·5%	35·8%	34·6%	23·1%	100 %

Differences of this kind are usually to be associated with the emergence of a new strain of parasite or with unusual waning of the immunal state of the older section of the hosts—the latter sometimes as a result of temporary disappearance of the disease. It is difficult to believe seriously in the second alternative when it is common knowledge that poliomyelitis was at least sporadically and sometimes endemically present in Scotland throughout the previous twenty-two years, and probably much longer. It is not much easier to believe in the first, when the age-specific rates of Table 2 are studied. Truth is probably somewhere between the two, the Scottish poliomyelitis of 1947 having been associated with a minor variant of the parasite, against which adult immunity was fairly solid. The peculiar environment of early infancy has also probably affected the incidence rate in children under the age of 1. Whether there was in fact some variant of the virus is a question which cannot be answered by age studies or, in general, studies of indirect evidence.

(*d*) **Sex.** In brief, there were (*a*) an excess of males with paralysis, (*b*) a greater excess of males without paralysis, and (*c*) equal numbers of both sexes in rejected notifications. The converse of an excess of females in certain other infections has been attributed to their greater attachment to the home, and it is possible that attachment to the home and to the family group acts in a protective fashion against poliomyelitic infection. The implication is that infection with poliomyelitis virus tends to be acquired selectively through contacts outside the home. If so, the greater male excess of non-paralytic cases could be interpreted as part of the process of acquisition of " natural " active immunity which, against this virus, would seem to be quite short-lived as the incidence rates in males were consistently higher than those in females. One curious and consistent fact (section 5 (*b*)) was the significant excess of males with non-paralytic poliomyelitis at ages under 5.

(*e*) **Geography.** It has been sufficiently shown (section 6 (*b*)) that paralytic poliomyelitis was, during the 1947 outbreak in Scotland, a disease principally of the cities ; concomitantly, rejected notifications were commonest in these cities. The focal attack of the outbreak in cities was in children under 5, whereas in rural areas it was in older persons. How this tallies with the assumptions of subsection (*c*) above must be mentioned if not explained, but before examining the data further it is expedient to tabulate them, as below.

TABLE AA

Percentages of accepted notifications

Age Group	All Large Burghs		Counties	
	1925–46, Years Above Median	1947	1925–46, Years Above Median	1947
–1	8·6%	7·2%	5·0%	5·8%
1–4	57·1%	39·7%	43·9%	31·5%
5–14	25·3%	33·4%	37·8%	35·9%
15–	9·1%	19·6%	13·3%	26·9%
All Ages	100%	99·9%	100%	100%

The above table, the percentages of which reflect very significant differences, indicates the profound differences in Scottish experience between previous years of higher prevalence and the part of 1947 under review. In large burghs there was a selective shift to older ages, especially to ages over 15 ; in counties the shift, while relatively as great at ages over 15 as in large burghs, did not appear at all at ages 4–14, and, further, the compensatory loss at ages under 1 was reversed in counties. It is probably much too early in our knowledge of the epidemiology of poliomyelitis to try to explain these facts : facile " causes ". could easily enough be adduced, yet must be recognised as no more than speculation. But the 1947 outbreak was not true to form.

(*f*) **History of illness.** The facts have already been reviewed in section 7 (*b*) above, and the possibility suggested that rejected notifications might have been documented less fully than accepted ones. Actually there has been little internal evidence in the completed case summaries of any such tendency, a conclusion reached after consideration of gaps such as have already been mentioned in section 8 (*a*) and elsewhere. Differences in history between accepted and rejected notifications are taken as real.

The data show that the association between previous illnesses and an attack of poliomyelitis, already well known elsewhere, manifested itself in the 1947 Scottish outbreak. Further, they underline the need for assessment of such histories in age groups, because of the significant falling off of positive histories with advancing years, in rejected notifications as in accepted ones. So far as can be judged by fatality rates, the history of antecedent illness did not affect the outcome of the attack of poliomyelitis and (section 22 (*b*)) the same lack of association applied when severity was judged by the need for treatment in a respirator.

It is not at all easy to reconcile the excess of positive histories in accepted cases with some of the later findings on social environment of such cases. Social environment tended to be good, or at least better than that of controls, whereas antecedent history was less satisfactory. Persons living in better social environment might remember recent illness better, or take more note of relatively trivial ones; but this argument would apply to rejected notifications equally with accepted ones. It seems that poliomyelitis has selected for attack those children whose reaction to better environment has never been satisfactory—and, conversely, avoided those who have had the ability to react well to worse environment.

(*g*) **Housing—apartments.** The association of poliomyelitis with good housing (judged by number of rooms) has already been described. Further, the association of severity with better housing has been pointed out in description of cases treated in respirators, and a suggestive, if technically non-significant trend of fatality rate mentioned (in section 8 (*d*)). Incidence rates were not given; the main reason was the lack of reliable up-to-date figures of distribution of population in Scotland by numbers of apartments. The latest official data were those published in the 1931 Census and a crude estimate of rates has been made by applying the 1931 distribution to the estimated 1947 population. Allowance was also made for cases in houses with unstated apartments.

Bearing in mind these considerable limitations, the following figures were derived from the data of the present survey.

TABLE AB

Incidence rates per 10,000 estimated population as percentages of the respective rates in all Scotland

Number of Apartments	Poliomyelitis: Without Paralysis	Poliomyelitis: With Paralysis	Poliomyelitis: Both Types	Not Poliomyelitis
1 ...	81·2%	81·9%	81·7%	155·5%
2 ...	59·4%	69·1%	67·2%	88·5%
3 ...	121·9%	114·2%	116·0%	120·1%
4 ...	137·5%	153·4%	149·6%	126·7%
5 or more	125·0%	110·3%	113·8%	53·1%
Any	100%	100%	100%	100%

The trends of poliomyelitis and "not poliomyelitis" were most dissimilar and even the greatest allowance for housing changes since 1931 would be very unlikely to alter their relation one to the other. If poliomyelitis affected selectively those living in larger houses, the selection appears not to have been progressive with higher and higher incidences as one considered larger and larger houses. Houses of two apartments seemed to be relatively spared by all types of illness, as if the estimate of persons living in this type of house had been too high (as it well may have been owing to rehousing of such families).

It is recognised that much more interesting data would have been available had there been estimates of population in age groups living in houses of the stated numbers of apartments. These were not capable of estimation.

(*h*) **Housing—number of occupants.** The description given in section 9 of this survey has been based on relative distributions of the three main types of illness. In brief, it may be resumed as having shown that, in the population studied, paralytic poliomyelitis was a disease especially affecting persons living in relative isolation or in small family groups. Non-paralytic poliomyelitis had an occupant distribution similar to that of rejected notifications. All notifications showed a similar trend towards fewer occupants when the age of the notified case was greater.

It was thought to be of interest to make a calculation similar to that of subsection (*g*) above, and with the same limitations in accuracy and interpretation. The result was the following table.

TABLE AC

Incidence rates per 10,000 estimated population as percentages of the respective rates in all Scotland

Number of Occupants	Poliomyelitis			Not Poliomyelitis
	Without Paralysis	With Paralysis	Both Types	
Under 3	20·3%	23·0%	22·4%	48·8%
3 ...	78·1%	111·3%	103·4%	93·8%
4 ...	139·1%	156·4%	152·2%	109·8%
5 ...	134·4%	127·0%	128·7%	120·1%
6 ...	92·2%	82·8%	85·1%	103·2%
7 or 8 ...	79·7%	68·1%	70·9%	103·2%
9– ...	118·7%	79·4%	88·8%	100·4%
Any ...	100%	100%	100%	100%

Both types of poliomyelitis showed a great reduction of incidence in that part of the population which lived in houses with less than three occupants. Some reduction, though not nearly so large, was shown by rejected notifications. Both types of poliomyelitis had a peak incidence in persons living in four-occupant households, with a considerable fall thereafter. The distribution of occupants in the " not poliomyelitis " type of illness was almost flat.

It is evident that in the largest household groups of nine or more persons the relative incidence of non-paralytic poliomyelitis was higher than that of the paralytic type. The outstanding features of the percentage distributions are thought to be the considerable evidence of selection by the poliomyelitic types of illness and the relative flatness of the " control " distribution. There is no one reason which could be adduced for this selective property of poliomyelitis.

(*i*) **Housing—degree of crowding.** It was not possible to translate the findings of section 10 into rates, as the numbers of persons in Scotland living in households with stated apartments and occupants was not available. The comparisons of that section must therefore remain relative, without population denominators.

It was obvious from Table J that poliomyelitis was a disease especially of persons living in four-apartment houses, particularly those with less than six occupants. Table AB gives partial confirmation of this. Again, Table K showed that household groups of less than six persons were in greater danger of attack, especially when living in larger houses. Partial confirmation could be obtained from Table AC. There can be little doubt of the cumulative truth of these observations, and of the likelihood that they point to some important property in either the human host or the particular environment which has led to selective attack. It is no less important to consider selective sparing from attack ; and inspection of Tables AB and AC leaves little doubt that the preponderant factor leading to sparing was not the number of apartments but the number of occupants —if under three. The very small family unit was selectively spared. No doubt this was partly associated with the fact that older persons may often live alone without families, and older persons have been shown to be relatively immune : but rejected notifications had an undue proportion of older persons (section 4 (*a*)) and yet their relative incidence rate was 48·8 per cent. (Table AC) when less than three were living in a household. The selective sparing of poliomyelitis can hardly, therefore, be attributable entirely to age.

(*j*) **Sanitary condition of home.** It was not expected that any fine gradation of sanitary condition could be achieved in assessing the homes of a very mixed group of patients, ranging from those with access to the best communal sanitary facilities to those in remote districts. The points that have undoubtedly emerged from a short categoric classification have been the association of poliomyelitis with good conditions and of rejected notifications with fair conditions. Whether the divergence of infants under the age of two from this general rule was of importance is seriously doubted.

(*k*) **Social class.** Not only did poliomyelitis attack selectively persons in classes I and II, but the disease in such patients was relatively severe (section 22 (*b*)). It is easy to associate the severity with the excess of older patients in social classes I and II (section 12 (*c*)) even though the age-specific fatality rate of older persons in these social classes (Table L) was not significantly higher than that of patients from other social classes. Why older persons in better-off social classes should be specially attacked is much more difficult of determination. The theories of preceding subsections may apply here.

(*l*) **Associated cases.** At the outset of the survey it was doubted whether associated cases would be reported in any sufficient number ; this supposition was based on the often sporadic notification and on the relatively rare instances of localised outbreaks of the paralytic type. In the event, very great differences were found between associations of accepted and rejected notifications. Such observations must be expected in the study of any infection and can hardly be considered new. They are of some value, nevertheless, in helping to establish that rejected notifications formed a sufficient contrast group for purposes of comparison.

(*m*) **Distribution in time.** The early stages of the 1947 outbreak were characterised by an excess of paralytic types of poliomyelitis in young children ; but too easy an interpretation must be modified by the detailed description of section 14 (*b*). The passage of time did not, on the whole, lead to a gradual dying out of clinical severity of the illness (section 22 (*b*)), nor did fatality rate appear to vary with time. The main feature of the time distribution has been the relative uniformity of these at the extremes of life, with some significant deviations between the ages of 5 and 20.

(*n*) **Interval to development of fever.** This interval was apparently of little importance either as a diagnostic aid or as a prognostic omen. It is not in any way regretted that the interval was entered in the data of the present survey but it is considered that in any future similar survey the question of its omission should be seriously considered.

(*o*) **Interval to onset of paralysis.** Some diagnostic importance might be attached to the length of this interval (section 16 (*c*)) but only limited guidance would be obtained in the diagnosis of the individual case. The prognostic importance of this interval appeared to be *nil.*

(*p*) **Interval to notification.** The shorter this interval was, the more likely the patient was to need treatment in a respirator and the more likely he was to die. There was no sign of delay in notification of infants nor, indeed, in any age group. For some reason patients aged 5–14 were not so sensitive (as measured by fatality rate) to changes in this interval as were patients at other ages ; this relative stability of fatality rate applied to rejected notifications as well as to accepted.

As a point of assistance in diagnosis of doubtful cases, there was the fact that the mean interval of accepted notifications was slightly greater than that of rejected.

(*q*) **Duration of stay in I.D. hospital.** The outbreak of 1947 consumed a large number of bed-days and, as might be expected, these were particularly taken up in the treatment of the paralytic type. Such initial treatment in an I.D. hospital tided the survivors over the acute phase of their illness, but the process occupied no less than six weeks for the average case of paralytic poliomyelitis and was often a prelude to prolonged observation and treatment elsewhere. Altogether, well over 50,000 bed-days were taken up in I.D. hospitals by the patients surveyed here.

(*r*) **Degree of paralysis.** The maximal paralysis (in survivors) depended largely in its severity upon age; there is no need to recapitulate the detailed statement of section 20A. Residual paralysis, on leaving the I.D. hospital, was similarly dependent to a considerable extent on age, but the worsening of the state on discharge, as age advanced, did not apply at ages over 30. So far as the individual patient was concerned, he was most liable to leave his first hospital with severe paralysis if between the ages of 15 and 29; fortunately, his chance of acquiring poliomyelitis was not, at these ages, nearly so great as it was at lesser ages.

(*s*) **Location of paralysis.** Little comment need be made on sections 21A and 21B. Two principal factors were involved in determining the outcome of the acute illness: anatomical site of infection, and spread to other sites. If only one site were invaded, most danger was attached to those sites which are high up in the central nervous system; these retained and even intensified their gravity when associated with other sites in multiple lesions, but the prognosis of cases with lower locations of lesion was much worsened by the addition of other locations; the *relative* gravity of higher locations was thereby apparently lessened.

On leaving the I.D. hospital, patients generally had much less extensive lesions than had been apparent at their maxima. The older the patient, however, the less likely he was to have restricted lesions on discharge. This fact tallies with the conclusion of subsection (*r*) above.

(*t*) **Mechanical respirators.** It is unnecessary to repeat section 22, but it may be stated in comment that the supply of breathing machines met the demand adequately and that local shortages (usually temporary) and breakdowns were, so far as is known, rectified without prolonged detriment to any patient.

(*u*) **Subsequent orthopædic treatment.** The aftermath of the 1947 outbreak still exists and, although the forecast of how long orthopædic treatment would be needed did not vary with age, it is inevitable that the younger patients will be under orthopædic supervision and treatment for many more years than their older fellows. How much surgical, nursing and technical skill will be absorbed during these years is a matter of speculation, but it will certainly much exceed the 50,000 bed-days in I.D. hospitals which have already been mentioned.

(*v*) **Pregnancy.** The association with poliomyelitis has already been described in detail. Pregnancy was not significantly associated with paralysis, clinical severity or fatality rate; but poliomyelitis remains a most disturbing complication of pregnancy and reasons for the significant association of the two remain obscure.

(*w*) **Post-mortem findings.** The recorded findings of Table Z were consistent with the accepted opinions that co-incident with the local destructive lesion in the central nervous system there is a generalised toxæmia. The use of aids such as mechanical respirators cannot be devoid of some associated dangers, and perhaps cases 4 and 5 of Table Z were examples of these. Two observations of thymic enlargement in infants cannot be seriously stressed. Case 6 of the table has its special interest, though the circumstances are not without precedent elsewhere.

(*x*) **Final observations.** No attempt is made to sum up the observation of the survey in one or two sentences. In fact the survey will have served a useful purpose if it reinforces the danger of categorical statements which, on closer study, demand such modification or amplification that the original simplicity is shown to be false. Poliomyelitis is, like other infections, a disease of complex characteristics ; those of the 1947 outbreak in Scotland have been described in detail. They differed from the features of the disease in previous years and outbreaks in Scotland. No doubt they differed from those of other outbreaks in various populations and at other times. It is hoped, however, that the detailed description, when compared with others elsewhere, will help to establish the common features of this serious infection and, with the development of techniques of confirmation of infection, eventually lead towards better techniques of study and control. It is fitting to return, finally, to the debt of thanks owed to Medical Officers of Health, their staffs and associates for the painstaking and accurate recording without which this survey could not have been begun.

APPENDIX I

Poliomyelitis Summary Record

1. **Local Authority**..

2. **Patient's Name**..

3. **Identifying Particulars** (for L.A. use)..

4. **Sex.** ☐ Male ☐ Female

5. **Date of Birth**..

6. **Infectious illnesses during previous twelve months,** affecting :
(*a*) Respiratory Tract (*b*) Digestive Tract

Diagnosis	Date	Diagnosis	Date

7. **Home Environment.**
i. No. of apartments..
ii. No. of occupants..
iii. Recent illness in occupants..
iv. Sanitary condition :
☐ Good
☐ Fair
☐ Bad

8. **Work.** Chief Wage Earner's Occupation..
Patient's Occupation (if not C.W.E.)..

9. **Presumed Means of Infection**..
Other Cases associated with this Case :

Identifying Particulars	Clinical Type	Nature of Association

10. **Dates.**

Event	Date	(For office use)
i. Onset of illness		
ii. Onset of fever		
iii. Onset of paralysis		
iv. Notification as poliomyelitis		
v. (Any other notification : specify)		
vi. Removal to I.D. hospital		
vii. Death ; *or*		
viii. Discharge from I.D. hospital		

11. **Paralysis.**

	(*a*) At maximum		(*b*) On leaving I.D. hospital
A. *Degree*	i. ☐	None	☐ i.
	ii. ☐	Slight	☐ ii.
	iii. ☐	Moderate	☐ iii.
	iv. ☐	Severe	☐ iv.
B. *Location*	i. ☐	Cerebral	☐ i.
	ii. ☐	Bulbar	☐ ii.
	iii. ☐	Upper cervical	☐ iii.
	iv. ☐	Lower cervical	☐ iv.
	v. ☐	Thoracic	☐ v.
	vi. ☐	Lumbar or sacral	☐ vi.

12. **Treatment.**

Mechanical Respirator used from..to..

Orthopædic treatment needed, after discharge from I.D. hospital, for

☐ weeks

☐ months

13. **Final Diagnosis.**

i. ☐ Not poliomyelitis, but..

ii. ☐ No paralysis, but accepted as poliomyelitis on clinical evidence *only*

iii. ☐ No paralysis, but accepted as poliomyelitis on laboratory evidence *only*

iv. ☐ No paralysis, but accepted as poliomyelitis on clinical plus laboratory evidence

v. ☐ Poliomyelitis with paralysis

14. **Post-mortem findings**..

....

....

15. **Remarks** ....

....

....

....

APPENDIX II

TABLE 1

Scotland, 1925-46 : deaths from poliomyelitis
(Data from annual reports of Registrar-General (Scotland))

Age in Years	Above Median (10 years)			Median and under (12 years)			Totals 1925–46		
	M.	F.	Both Sexes	M.	F.	Both Sexes	M.	F.	Both Sexes
Under 1	16	14	30	4	3	7	20	17	37
1–4	36	32	68	21	10	31	57	42	99
5–9	32	14	37	10	13	23	33	27	60
10–14	14	13	27	10	5	15	24	18	42
15–19	12	7	19	8	8	16	20	15	35
20–29	11	6	17	9	6	15	20	12	32
30–39	3	7	10	12	7	19	15	14	29
40–49	5	3	8	5	—	5	10	3	13
50–59	4	4	8	4	3	7	8	7	15
60–	4	5	9	2	4	6	6	9	15
All Ages	128	105	233	85	59	144	213	164	377

TABLE 2

Age and sex incidence rates per 10,000 population of 1,376 " accepted " cases of poliomyelitis in Scotland (population estimates for mid-1947 provided by the Registrar-General (Scotland))

Age in Years	Incidence Rate per 10,000 Population		
	Males	Females	Both Sexes
Under 1	8·98	7·15	8·08
1	22·04	18·19	20·16
2	16·96	12·62	14·82
3	19·33	10·34	14·91
4	10·58	5·98	8·30
5	11·90	7·07	9·51
6	7·52	7·66	7·59
7	9·19	6·01	7·61
8	7·98	5·99	7·00
9	4·08	4·01	4·05
Under 5	15·20	10·64	12·96
5–9	8·11	6·24	7·19
10–14	5·39	3·97	4·69
15–19	3·11	1·77	2·44
20–29	1·51	1·73	1·62
30–39	0·97	0·84	0·90
40–49	0·28	0·35	0·31
50–59	0·08	0·10	0·09
60–	0·09	—	0·04
All Ages	3·19	2·20	2·68

TABLE 3

Final Diagnoses and outcome of illness in 626 cases with final diagnosis of " not poliomyelitis "

Classification	Cases	Deaths
1. **No abnormality detected**	89	—
2. **Normal pregnancy**	2	—
3. **Pyrexial conditions**		
Heatstroke	8	—
Pyrexia of undetermined origin	16	—
Influenza	13	—
4. **Nervous system conditions**		
Functional conditions	22	—
Non-tubercular meningitis	31	3
Tubercular meningitis	22	21
Other organic conditions	42	5
5. **Locomotory system conditions**		
Mechanical trauma	29	—
Acute rheumatism	28	—
Other conditions	35	—
6. **Respiratory system conditions**		
Upper respiratory infections	32	—
Otitis media	11	—
Tonsilitis	62	—
Laryngitis and bronchitis	25	—
Pneumonias	28	3
Other conditions	11	—
7. **Circulatory system conditions**	17	7
8. **Digestive system conditions**	34	—
9. **All other conditions**	69	1
Totals	626	40

TABLE 4

Poliomyelitis notifications : both sexes

Age in Years	Accepted as Poliomyelitis									Not Poliomyelitis			All Final Diagnoses		
	Without Paralysis			With Paralysis			All Cases								
	Cases	D.	F.R. %	Cases	D.	F.R. %	Cases	D.	F.R. %	Cases	D.	F.R. %	Cases	D.	F.R. %
Under 1	5	1	(20)	85	8	9·4	90	9	10·0	38	5	13·2	128	14	10·9
1	15	—	—	157	9	5·7	172	9	5·2	51	6	11·8	223	15	6·73
2	12	—	—	112	9	8·0	124	9	7·3	45	—	—	169	9	5·3
3	29	1	3·4	97	4	4·1	126	5	4·0	43	3	7·0	169	8	4·7
4	16	—	—	54	4	7·4	70	4	5·7	31	2	6·5	101	6	5·9
5	12	—	—	64	6	9·4	76	6	7·9	22	3	13·6	98	9	9·2
6	25	—	—	35	5	14·3	60	5	8·3	24	—	—	84	5	6·0
7	28	—	—	33	4	12·1	61	4	6·6	23	—	—	84	4	4·8
8	20	—	—	37	9	24·3	57	9	15·8	25	—	—	82	9	11·0
9	14	—	—	21	3	14·3	35	3	8·6	26	2	7·7	61	5	8·2
0–4	77	2	2·6	505	34	6·73	582	36	6·19	208	16	7·69	790	52	6·58
5–9	99	—	—	190	27	14·2	289	27	9·34	120	5	4·2	409	32	7·82
10–14	65	—	—	122	8	6·6	187	8	4·3	92	2	2·2	279	10	3·58
15–19	29	—	—	69	13	18·8	98	13	13·3	61	4	6·6	159	17	10·7
20–29	39	—	—	84	19	22·6	123	19	15·4	60	3	5·0	183	22	12·0
30–39	17	1	(6)	50	10	20·0	67	11	16·4	44	2	4·5	111	13	11·7
40–49	2	—	—	20	5	25·0	22	5	22·7	21	3	14·3	43	8	18·6
50–59	1	1	(100)	4	1	(25)	5	2	(40)	14	2	(14)	19	4	(21)
60 + ...	—	—	—	3	1	(33)	3	1	(33)	6	3	(50)	9	4	(44)
All Ages	329	4	1·22	1,047	118	11·27	1,376	122	8·87	626	40	6·39	2,002	162	8·09

D—Deaths. F.R.—Fatality Rate.

TABLE 5

Poliomyelitis notifications : males

Age in Years	Accepted as Poliomyelitis									Not Poliomyelitis			All Final Diagnoses		
	Without Paralysis			With Paralysis			All Cases								
	Cases	D.	F.R. %	Cases	D.	F.R. %	Cases	D.	F.R. %	Cases	D.	F.R. %	Cases	D.	F.R. %
Under 1	5	1	(20)	46	4	8·7	51	5	9·8	23	3	13·0	74	8	10·8
1	10	—	—	86	9	10·5	96	9	9·4	20	3	15·0	116	12	10·3
2	10	—	—	62	6	9·7	72	6	8·3	28	—	—	100	6	6·0
3	20	1	5·0	63	4	6·3	83	5	6·0	25	1	4·0	108	6	5·6
4	10	—	—	35	4	11·4	45	4	8·9	18	—	—	63	4	6·3
5	5	—	—	43	4	9·3	48	4	8·3	13	2	(15)	61	6	9·8
6	15	—	—	15	2	(13)	30	2	6·7	12	—	—	42	2	4·8
7	17	—	—	20	3	15·0	37	3	8·1	13	—	—	50	3	6·0
8	11	—	—	22	5	22·7	33	5	15·2	13	—	—	46	5	10·9
9	7	—	—	10	2	(20)	17	2	(12)	14	2	(14)	31	4	12·9
0–4	55	2	3·6	292	27	9·25	347	29	8·36	114	7	6·1	461	36	7·81
5–9	55	—	—	110	16	14·5	165	16	9·7	65	4	6·2	230	20	8·70
10–14	42	—	—	67	4	6·0	109	4	3·7	48	1	2·1	157	5	3·2
15–19	21	—	—	42	7	16·7	63	7	11·1	26	1	3·8	89	8	9·0
20–29	21	—	—	38	8	21·1	59	8	13·6	23	3	13·0	82	11	13·4
30–39	7	—	—	28	6	21·4	35	6	17·1	16	—	—	51	6	11·8
40–49	—	—	—	9	4	(44)	9	4	(44)	10	2	(20)	19	6	(32)
50–59	—	—	—	2	1	(50)	2	1	(50)	7	2	(29)	9	3	(33)
60 + ...	—	—	—	3	1	(33)	3	1	(33)	3	3	(100)	6	4	(67)
All Ages	201	2	1·00	591	74	12·52	792	76	9·60	312	23	7·37	1,104	99	8·96

TABLE 6

Poliomyelitis notifications : females

Age in Years	Accepted as Poliomyelitis									Not Poliomyelitis			All Final Diagnoses		
	Without Paralysis			With Paralysis			All Cases								
	Cases	D.	F.R. %	Cases	D.	F.R. %	Cases	D.	F.R. %	Cases	D.	F.R. %	Cases	D.	F.R. %
Under 1	—	—	—	39	4	10·3	39	4	10·3	15	2	(13)	54	6	11·1
1	5	—	—	71	—	—	76	—	—	31	3	9·7	107	3	2·8
2	2	—	—	50	3	6·0	52	3	5·8	17	—	—	69	3	4·3
3	9	—	—	34	—	—	43	—	—	18	2	(11)	61	2	3·3
4	6	—	—	19	—	—	25	—	—	13	2	(15)	38	2	5·3
5	7	—	—	21	2	9·5	28	2	7·1	9	1	(11)	37	3	8·1
6	10	—	—	20	3	15·0	30	3	10·0	12	—	—	42	3	7·1
7	11	—	—	13	1	(8)	24	1	4·2	10	—	—	34	1	2·9
8	9	—	—	15	4	(27)	24	4	16·7	12	—	—	36	4	11·1
9	7	—	—	11	1	(9)	16	1	(6)	12	—	—	30	1	3·3
0–4	22	—	—	213	7	3·29	235	7	2·98	94	9	9·6	329	16	4·86
5–9	44	—	—	80	11	13·7	124	11	8·9	55	1	1·8	179	12	6·7
10–14	23	—	—	55	4	7·3	78	4	5·1	44	1	2·3	122	5	4·1
15–19	8	—	—	27	6	22·2	35	6	17·1	35	3	8·6	70	9	12·9
20–29	18	—	—	46	11	23·9	64	11	17·2	37	—	—	101	11	10·9
30–39	10	1	(10)	22	4	18·2	32	5	15·6	28	2	7·1	60	7	11·7
40–49	2	—	—	11	1	(9)	13	1	(8)	11	1	(9)	24	2	8·3
50–59	1	1	(100)	2	—	—	3	1	(33)	7	—	—	10	1	(10)
60 + ...	—	—	—	—	—	—	—	—	—	3	—	—	3	—	—
All Ages	128	2	1·6	456	44	9·65	584	46	7·88	314	17	5·41	898	63	7·02

TABLE 7

Poliomyelitis notifications : Glasgow

Age in Years	Sex	Accepted as Poliomyelitis						Not Polio-myelitis		All Final Diagnoses	
		Without Paralysis		With Paralysis		All Cases					
		Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.
Under 1	M.	1	—	13	1	14	1	10	1	24	2
	F.	—	—	11	3	11	3	4	2	15	5
1	M.	1	—	31	—	32	—	10	—	42	—
	F.	1	—	22	—	23	—	15	—	38	—
2	M.	3	—	13	1	16	1	12	—	28	1
	F.	1	—	17	—	18	—	5	—	23	—
3	M.	2	—	21	—	23	—	9	—	32	—
	F.	4	—	8	—	12	—	7	1	19	1
4	M.	3	—	3	—	6	—	4	—	10	—
	F.	2	—	7	—	9	—	4	1	13	1
Under 5	M.	10	—	81	2	91	2	45	1	136	3
	F.	8	—	65	3	73	3	35	4	108	7
5–9	M.	14	—	24	4	38	4	26	2	64	6
	F.	6	—	22	7	28	7	27	1	55	8
10–14	M.	9	—	13	—	22	—	11	—	33	—
	F.	2	—	9	1	11	1	14	—	25	1
15–19	M.	6	—	5	2	11	2	10	—	21	2
	F.	...	—	7	1	7	1	12	2	19	3
20–29	M.	1	—	4	1	5	1	4	2	9	3
	F.	1	—	5	1	6	1	11	—	17	1
30–	M.	1	—	13	6	14	6	12	4	26	10
	F.	1	—	4	—	5	—	19	1	24	1
All Ages	M.	41	—	140	15	181	15	108	9	289	24
	F.	18	—	112	13	130	13	118	8	248	21
	M.+F.	59	—	252	28	311	28	226	17	537	45

D.—Deaths.

TABLE 8

Poliomyelitis notifications : Edinburgh, Aberdeen and Dundee

Age in Years	Sex	Accepted as Poliomyelitis						Not Polio-myelitis		All Final Diagnoses	
		Without Paralysis		With Paralysis		All Cases					
		Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.
Under 1	M.	—	—	8	2	8	2	4	—	12	2
	F.	—	—	6	1	6	1	5	—	11	1
1	M.	3	—	11	2	14	2	6	1	20	3
	F.	—	—	12	—	12	—	3	1	15	1
2	M.	1	—	15	1	16	1	5	—	21	1
	F.	—	—	9	1	9	1	4	—	13	1
3	M.	4	—	12	2	16	2	6	—	22	2
	F.	1	—	7	—	8	—	2	—	10	—
4	M.	2	—	7	—	9	—	3	—	12	—
	F.	2	—	1	—	3	—	4	—	7	—
Under 5	M.	10	—	53	7	63	7	24	1	87	8
	F.	3	—	35	2	38	2	18	1	56	3
5–9	M.	5	—	20	2	25	2	20	1	45	3
	F.	11	—	17	—	28	—	12	—	40	—
10–14	M.	10	—	10	2	20	2	18	—	38	1
	F.	2	—	9	—	11	—	14	—	25	—
15–19	M.	4	—	2	—	6	—	6	—	12	—
	F.	—	—	6	1	6	1	15	1	21	2
20–29	M.	3	—	8	2	11	2	3	—	14	2
	F.	4	—	11	5	15	5	12	—	27	5
30–	M.	1	—	3	2	4	2	9	1	13	3
	F.	3	—	10	4	13	4	14	1	27	5
All Ages	M.	33	—	96	15	129	15	80	3	209	18
	F.	23	—	88	12	111	12	85	3	196	15
	M.+F.	56	—	184	27	240	27	165	6	405	33

D.—Deaths.

TABLE 9

Poliomyelitis notifications : twenty large burghs (i.e., all large burghs except cities)

Age in Years	Sex	Accepted as Poliomyelitis						Not Polio-myelitis		All Final Diagnoses	
		Without Paralysis		With Paralysis		All Cases					
		Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.
Under 1	M. F.	— —	— —	7 6	— —	7 6	— —	3 2	1 —	10 8	1 —
1	M. F.	— 2	— —	10 6	— —	10 8	— —	1 2	1 1	11 10	1 1
2	M. F.	1 1	— —	12 5	1 —	13 6	1 —	4 2	— —	17 8	1 —
3	M. F.	2 1	— —	5 4	1 —	7 5	1 —	3 2	1 —	10 7	2 —
4	M. F.	1 —	— —	6 3	1 —	7 3	1 —	— —	— —	7 3	1 —
Under 5	M. F.	4 4	— —	40 24	3 —	44 28	3 —	11 8	3 1	55 36	6 1
5–9	M. F.	9 6	— —	18 7	2 —	27 13	2 —	4 5	1 —	31 18	3 —
10–14	M. F.	4 5	— —	1 7	— 1	5 12	— 1	9 8	— 1	14 20	— 2
15–19	M. F.	2 4	— —	4 3	1 2	6 7	1 2	— 2	— —	6 9	1 2
20–29	M. F.	1 2	— —	3 10	1 1	4 12	1 1	2 4	— —	6 16	1 1
30–	M. F.	1 1	— —	4 3	— —	5 4	— —	3 4	1 —	8 8	1 —
All Ages	M. F. M.+F.	21 22 43	— — —	70 54 124	7 4 11	91 76 167	7 4 11	29 31 60	5 2 7	120 107 227	12 6 18

D.—Deaths.

TABLE 10

Poliomyelitis notifications : counties (excluding large burghs)

Age in Years	Sex	Accepted as Poliomyelitis: Without Paralysis Cases	D.	Accepted as Poliomyelitis: With Paralysis Cases	D.	Accepted as Poliomyelitis: All Cases Cases	D.	Not Polio-myelitis Cases	D.	All Final Diagnoses Cases	D.
Under 1	M.	4	1	18	1	22	2	6	1	28	3
	F.	—	—	16	—	16	—	4	—	20	—
1	M.	6	—	34	7	40	7	3	1	43	8
	F.	2	—	31	—	33	—	11	1	44	1
2	M.	5	—	22	3	27	3	7	—	34	3
	F.	—	—	19	2	19	2	6	—	25	2
3	M.	12	1	25	1	37	2	7	—	44	2
	F.	3	—	15	—	18	—	7	1	25	1
4	M.	4	—	19	3	23	3	11	—	34	3
	F.	2	—	8	—	10	—	5	1	15	1
Under 5	M.	31	2	118	15	149	17	34	2	183	19
	F.	7	—	89	2	96	2	33	3	129	5
5–9	M.	27	—	48	8	75	8	15	—	90	8
	F.	21	—	34	4	55	4	11	—	66	4
10–14	M.	19	—	43	2	62	2	10	1	72	3
	F.	14	—	30	2	44	2	8	—	52	2
15–19	M.	9	—	31	4	40	4	10	1	50	5
	F.	4	—	11	2	15	2	6	—	21	2
20–29	M.	16	—	23	4	39	4	14	1	53	5
	F.	11	—	20	4	31	4	10	—	41	4
30–	M.	4	—	22	4	26	4	12	1	38	5
	F.	8	2	18	1	26	3	12	1	38	4
All Ages	M.	106	2	285	37	391	39	95	6	486	45
	F.	65	2	202	15	267	17	80	4	347	21
	M.+F.	171	4	487	52	658	56	175	10	833	66

D.—Deaths.

TABLE 11

Poliomyelitis notifications according to history illness* during twelve months preceding attack of poliomyelitis

Age in Years	No History of Illness										Respiratory Tract Illnesses only										All Other Illnesses										Grand Total	
	Accepted as Poliomyelitis						Not Polio-myelitis		Total		Accepted as Poliomyelitis						Not Polio-myelitis		Total		Accepted as Poliomyelitis						Not Polio-myelitis		Total			
	Without Paralysis		With Paralysis		Total						Without Paralysis		With Paralysis		Total						Without Paralysis		With Paralysis		Total							
	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.
Under 1	5	1	74	7	79	8	35	5	114	13	—	—	8	1	8	1	1	—	9	1	—	—	3	—	3	—	2	—	5	—	128	14
1	11	—	128	7	139	7	47	5	186	12	3	—	22	2	25	2	4	1	29	3	1	—	7	—	8	—	—	—	8	—	223	15
2	12	—	92	8	104	8	42	—	146	8	—	—	18	1	18	1	1	—	19	1	—	—	2	—	2	—	2	—	4	—	169	9
3	23	1	78	3	101	4	37	2	138	6	5	—	16	1	21	1	5	1	26	2	1	—	3	—	4	—	1	—	5	—	169	8
4	12	—	41	4	53	4	27	1	80	5	3	—	11	—	14	—	4	1	18	1	1	—	2	—	3	—	—	—	3	—	101	6
Under 5	63	2	413	29	476	31	188	13	664	44	11	—	75	5	86	5	15	3	101	8	3	—	17	—	20	—	5	—	25	—	790	52
5–9	83	—	166	21	249	21	114	5	363	26	15	—	24	6	39	6	5	—	44	6	1	—	—	—	1	—	1	—	2	—	409	32
10–14	58	—	107	8	165	8	88	1	253	9	5	—	13	—	18	—	2	1	20	1	2	—	2	—	4	—	2	—	6	—	279	10
15–19	29	—	62	11	91	11	60	3	151	14	—	—	7	2	7	2	1	1	8	3	—	—	—	—	—	—	—	—	—	—	159	17
20–29	38	—	81	18	119	18	52	3	171	21	—	—	2	1	2	1	8	—	10	1	1	—	1	—	2	—	—	—	2	—	183	22
30–	20	2	68	16	88	18	84	10	172	28	—	—	5	—	5	—	1	—	6	—	—	—	4	1	4	1	—	—	4	1	182	29
All Ages	291	4	897	103	1188	107	586	35	1774	142	31	—	126	14	157	14	32	5	189	19	7	—	24	1	31	1	8	—	39	1	2002	162

*Recorded illnesses were infections affecting the respiratory and/or digestive tracts.

C.—Cases. D.—Deaths.

TABLE 12

Poliomyelitis notifications by number of apartments in household of each patient

Age in Years	One Apartment						Two Apartments						Three Apartments					
	Poliomyelitis				Not Poliomyelitis		Poliomyelitis				Not Poliomyelitis		Poliomyelitis				Not Poliomyelitis	
	Without Paralysis		With Paralysis				Without Paralysis		With Paralysis				Without Paralysis		With Paralysis			
	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.
Under 1	—	—	7	—	7	2	—	—	31	4	13	—	4	1	23	3	7	1
1	4	—	20	—	7	—	5	—	54	3	21	1	2	—	39	3	13	2
2	2	—	9	1	6	—	5	—	37	2	19	—	4	—	42	4	7	—
3	3	—	10	—	4	1	7	1	29	1	14	2	12	—	31	2	14	—
4	2	—	1	—	3	—	5	—	23	1	10	1	4	—	18	1	10	—
Under 5	11	—	47	1	27	3	22	1	174	11	77	4	26	1	153	13	51	3
5–9	4	—	7	2	17	—	28	—	43	6	32	2	31	—	54	9	37	3
10–14	—	—	2	—	4	—	11	—	25	1	24	1	23	—	40	—	26	1
15–19	—	—	—	—	3	—	5	—	5	—	14	3	10	—	30	5	16	—
20–29	3	—	5	—	7	—	4	—	7	2	14	1	11	—	15	5	14	1
30–	1	—	—	—	3	1	3	—	14	3	20	1	4	—	20	4	29	4
All Ages	19	—	61	3	61	4	73	1	268	23	181	12	105	1	312	36	173	12

Age in Years	Four Apartments						Five + Apartments						Institutions					
	Poliomyelitis				Not Poliomyelitis		Poliomyelitis				Not Poliomyelitis		Poliomyelitis				Not Poliomyelitis	
	Without Paralysis		With Paralysis				Without Paralysis		With Paralysis				Without Paralysis		With Paralysis			
	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.
Under 1	—	—	20	1	5	2	1	—	4	—	1	—	—	—	—	—	—	—
1	3	—	29	1	2	—	1	—	15	2	4	1	—	—	—	—	—	—
2	1	—	15	—	6	—	—	—	8	2	3	—	—	—	1	—	1	—
3	4	—	10	—	7	—	3	—	16	1	1	—	—	—	—	—	—	—
4	—	—	7	—	4	1	4	—	5	2	1	—	—	—	—	—	—	—
Under 5	8	—	81	2	24	3	9	—	48	7	10	1	—	—	1	—	1	—
5—9	16	—	41	8	15	—	20	—	44	2	7	—	—	—	1	—	—	—
10–14	13	—	24	3	17	—	14	—	27	3	6	—	2	—	3	—	2	—
15–19	6	—	10	2	9	—	4	—	21	5	4	1	3	—	2	1	5	—
20–29	5	—	20	4	7	—	10	—	28	5	5	1	6	—	7	2	3	—
30–	6	2	17	4	12	1	5	—	24	6	7	2	1	—	1	—	2	—
All Ages	54	2	193	23	84	4	62	—	192	28	39	5	12	—	15	3	13	—

Age in Years	Apartments Unstated						Totals	
	Poliomyelitis				Not Poliomyelitis			
	Without Paralysis		With Paralysis					
	C.	D.	C.	D.	C.	D.	C.	D.
Under 1	—	—	—	—	5	—	128	14
1	—	—	—	—	4	2	223	15
2	—	—	—	—	3	—	169	9
3	—	—	1	—	3	—	169	8
4	1	—	—	—	3	—	101	6
Under 5	1	—	1	—	18	2	790	52
5–9	—	—	—	—	12	—	409	32
10–14	2	—	1	1	13	—	279	10
15–19	1	—	1	—	10	—	159	17
20–29	—	—	2	1	10	—	183	22
30–	—	—	1	—	12	1	182	29
All Ages	4	—	6	2	75	3	2002	162

C.—Cases. D.—Deaths.

TABLE 12A

Percentage of cases at each age living in the stated number of apartments (unstated apartments excluded)

Age in Years	Poliomyelitis												Not Poliomyelitis					
	Without Paralysis						With Paralysis											
	1	2	3	4	5 – *	Total	1	2	3	4	5 – *	Total	1	2	3	4	5 – *	Total
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Under 5	14·5	28·9	34·2	10·5	11·8	100	9·3	34·5	30·4	16·1	9·7	100	14·2	40·5	26·8	12·6	5·8	100
5–9	4·0	28·3	31·3	16·2	20·2	100	3·7	22·6	28·4	21·6	23·7	100	15·7	29·6	34·3	13·9	6·5	100
10–14	—	17·5	36·5	20·6	25·4	100	1·7	20·7	33·1	19·8	24·8	100	5·1	30·4	32·9	21·5	10·1	100
15–19	—	18·0	36·0	21·0	25·0	100	—	7·4	44·1	14·7	33·8	100	5·9	27·5	31·4	17·6	17·6	100
20–29	8·0	10·0	28·0	13·0	41·0	100	6·1	8·5	18·3	24·4	42·6	100	14·0	28·0	28·0	14·0	16·0	100
30–	5·0	15·0	20·0	30·0	30·0	100	—	18·4	26·3	22·4	32·9	100	4·1	27·4	39·7	16·4	12·3	100
All Ages	5·8	22·5	32·3	16·6	22·8	100	5·9	25·7	30·0	18·5	19·9	100	11·1	32·8	31·4	15·2	9·4	100

* Including Institutions.

TABLE 13

Poliomyelitis notifications subdivided by number of occupants in household

Age in Years	Under Three Occupants						Three Occupants						Four Occupants						Five Occupants					
	Poliomyelitis				Not Poliomyelitis		Poliomyelitis				Not Poliomyelitis		Poliomyelitis				Not Poliomyelitis		Poliomyelitis				Not Poliomyelitis	
	Without Paralysis		With Paralysis				Without Paralysis		With Paralysis				Without Paralysis		With Paralysis				Without Paralysis		With Paralysis			
	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.
Under 1	—	—	1	—	1	—	1	—	8	1	5	1	—	—	13	1	5	—	2	1	19	—	7	2
1	—	—	—	—	1	1	1	—	20	3	6	2	5	—	42	1	12	—	2	—	42	1	9	—
2	—	—	—	—	1	—	—	—	20	—	9	—	3	—	37	4	8	—	3	—	18	—	5	—
3	—	—	1	—	—	—	4	—	15	—	6	—	9	—	32	2	15	1	9	1	22	—	5	1
4	—	—	—	—	—	—	1	—	11	1	8	—	6	—	15	1	7	1	2	—	10	—	7	—
Under 5	—	—	2	—	3	1	7	—	74	5	34	3	23	—	139	9	47	2	18	2	111	1	33	3
5–9	—	—	1	—	3	—	11	—	35	8	10	—	19	—	56	8	21	1	25	—	49	8	22	3
10–14	—	—	5	1	3	—	5	—	24	—	7	—	15	—	34	2	7	1	21	—	24	1	19	—
15–19	—	—	1	—	5	—	6	—	9	1	3	—	8	—	23	4	10	—	4	—	17	4	11	1
20–29	4	—	5	2	4	—	6	—	20	6	9	1	12	—	25	4	7	—	4	—	8	—	14	1
30–	3	—	11	3	10	3	4	2	15	4	15	2	7	—	23	5	18	1	3	—	16	3	12	1
All Ages	7	—	25	6	28	4	39	2	177	24	78	6	84	—	300	32	110	5	75	2	225	17	111	9

Age in Years	Six Occupants						Seven or Eight Occupants						Nine or more Occupants						Occupants unstated					
	Poliomyelitis				Not Poliomyelitis		Poliomyelitis				Not Poliomyelitis		Poliomyelitis				Not Poliomyelitis		Poliomyelitis				Not Poliomyelitis	
	Without Paralysis		With Paralysis				Without Paralysis		With Paralysis				Without Paralysis		With Paralysis				Without Paralysis		With Paralysis			
	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.
Under 1	1	—	17	4	7	—	—	—	13	—	6	—	1	—	14	2	2	2	—	—	—	—	5	—
1	4	—	19	1	8	—	1	—	22	1	8	1	2	—	12	2	2	—	—	—	—	—	5	2
2	1	—	13	—	5	—	2	—	16	4	7	—	3	—	7	—	7	—	—	—	1	1	3	—
3	—	—	15	1	5	—	3	—	7	—	8	1	4	—	4	1	1	—	—	—	1	—	3	—
4	4	—	7	1	2	1	2	—	7	1	3	—	—	—	4	—	1	—	1	—	—	—	3	—
Under 5	10	—	71	7	27	1	8	—	65	6	32	2	10	—	41	5	13	2	1	—	2	1	19	2
5–9	16	—	22	2	20	—	23	—	17	1	22	1	5	—	10	—	9	—	—	—	—	—	13	—
10–14	8	—	10	—	16	—	8	—	16	1	18	1	6	—	7	1	8	—	2	—	2	2	14	—
15–19	2	—	5	—	7	1	1	—	8	3	5	1	7	—	5	1	10	1	1	—	1	—	10	—
20–29	4	—	4	—	2	1	3	—	9	2	8	—	6	—	10	3	5	—	—	—	3	2	11	—
30–	1	—	5	2	4	—	—	—	2	—	8	1	2	—	4	—	6	1	—	—	1	—	12	1
All Ages	41	—	117	11	76	3	43	—	117	13	93	6	36	—	77	10	51	4	4	—	9	5	79	3

D.—Deaths.

TABLE 13A

Percentage of cases at stated ages living in houses with stated number of occupants (unstated occupants excluded)

Age in Years	Poliomyelitis without Paralysis							Poliomyelitis with Paralysis							Not Poliomyelitis						
	Number of Occupants							Number of Occupants							Number of Occupants						
	– 4	4	5	6	7 or 8	9 —*	Total	– 4	4	5	6	7 or 8	9 – *	Total	– 4	4	5	6	7 or 8	9 – *	Total
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Under 1	(20)	—	(40)	(20)	—	(20)	100	10·6	15·3	22·4	20·0	15·3	16·5	100	18·2	15·2	21·2	21·2	18·2	6·1	100
1	7·0	33·0	13·0	27·0	7·0	13·0	100	12·7	26·8	26·8	12·1	14·0	7·6	100	15·2	26·1	19·6	17·4	17·4	4·3	100
2	—	25·0	25·0	8·0	17·0	25·0	100	18·0	33·3	16·2	11·7	14·4	6·3	100	23·8	19·0	11·9	11·9	16·7	16·7	100
3	13·8	31·0	31·0	—	10·0	14·0	100	16·7	33·3	22·9	15·6	7·3	4·2	100	15·0	37·5	12·5	12·5	20·0	2·5	100
4	7·0	40·0	13·0	27·0	13·0	—	100	20·4	27·8	18·5	13·0	13·0	7·4	100	28·6	25·0	25·0	7·1	10·7	3·6	100
Under 5	9·2	30·3	23·7	13·2	10·5	13·2	100	15·1	27·6	22·1	14·1	12·9	8·1	100	19·6	24·9	17·5	14·3	16·9	6·9	100
5–9	11·1	19·2	25·3	16·2	23·2	5·1	100	18·9	29·5	25·8	11·6	8·9	5·3	100	12·1	19·6	20·6	18·7	20·6	8·4	100
10–14	7·9	23·8	33·3	12·7	12·7	9·5	100	24·2	28·3	20·0	8·3	13·3	5·8	100	12·8	9·0	24·4	20·5	23·1	10·3	100
15–19	21·4	28·6	14·3	7·1	3·6	25·0	100	14·7	33·8	25·0	7·4	11·8	7·3	100	15·7	19·6	21·6	13·7	9·8	19·6	100
20–29	25·6	30·8	10·3	10·3	7·7	15·4	100	30·9	30·9	9·9	4·9	11·1	12·3	100	26·5	14·3	28·6	4·1	16·3	10·2	100
30–	35·0	35·0	15·0	5·0	—	10·0	100	34·2	30·3	21·1	6·6	2·6	5·3	100	34·2	24·7	16·4	5·5	11·0	8·2	100
All Ages	14·2	25·8	23·1	12·6	13·2	11·1	100	19·5	28·9	21·7	11·3	11·3	7·4	100	19·4	20·1	20·3	13·9	17·0	9·3	100

*Including Institutions.

TABLE 14

Poliomyelitis notifications subdivided by numbers of apartments and occupants in the household (92 cases with unstated occupants excluded)

No. of Apartments	Age in Years	Number of Occupants																													
		Less than Four						Four						Five						Six						Seven or more					
		Poliomyelitis				Not Polio-myelitis		Poliomyelitis				Not Polio-myelitis		Poliomyelitis				Not Polio-myelitis		Poliomyelitis				Not Polio-myelitis		Poliomyelitis				Not Polio-myelitis	
		Without Paralysis		With Paralysis				Without Paralysis		With Paralysis				Without Paralysis		With Paralysis				Without Paralysis		With Paralysis				Without Paralysis		With Paralysis			
		C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.
One	Under 5	3	—	10	—	11	—	6	—	15	1	7	—	—	—	13	—	6	3	1	—	3	—	2	—	1	—	6	—	1	—
	5–9	—	—	1	1	6	—	2	—	2	—	4	—	2	—	2	1	2	—	—	—	1	—	3	—	—	—	1	—	2	—
	10–14	—	—	—	—	1	—	—	—	—	—	1	—	—	—	1	—	1	—	—	—	1	—	1	—	—	—	—	—	—	—
	15–	3	—	3	—	4	1	1	—	2	—	2	—	—	—	—	—	4	—	—	—	—	—	2	—	—	—	—	—	1	—
	All Ages	6	—	14	1	22	1	9	—	19	1	14	—	2	—	16	1	13	3	1	—	5	—	8	—	1	—	7	—	4	—
Two	Under 5	1	—	33	1	15	1	8	—	51	1	25	1	7	1	42	1	12	—	3	—	28	6	14	1	3	—	19	1	10	1
	5–9	3	—	13	3	3	—	9	—	16	1	9	—	6	—	10	2	10	1	2	—	2	—	4	—	8	—	2	—	6	1
	10–14	—	—	9	1	2	—	4	—	10	—	5	1	2	—	4	—	7	—	4	—	1	—	3	—	1	—	1	—	7	—
	15–	4	—	12	2	20	2	4	—	7	2	13	—	2	—	6	1	5	—	1	—	1	—	3	1	1	—	—	—	7	2
	All Ages	8	—	67	7	40	3	25	—	84	4	52	2	17	1	62	4	34	1	10	—	32	6	24	2	13	—	22	1	30	4
Three	Under 5	1	—	26	2	8	2	4	—	49	6	10	—	7	1	32	—	11	—	4	—	22	1	5	—	10	—	24	4	17	1
	5–9	5	—	9	3	4	—	1	—	16	4	6	1	10	—	13	1	9	2	7	—	6	—	8	—	8	—	10	1	9	—
	10–14	4	—	9	—	4	—	4	—	12	—	1	—	9	—	6	—	6	—	1	—	8	—	8	—	5	—	5	—	6	1
	15–	8	—	17	5	15	1	9	—	21	5	14	1	3	—	14	2	15	1	1	—	5	—	4	1	4	—	8	2	11	1
	All Ages	18	—	61	10	31	3	18	—	98	15	31	2	29	1	65	3	41	3	13	—	41	1	25	1	27	—	47	7	43	3
Four	Under 5	—	—	5	—	3	1	3	—	13	—	3	1	2	—	17	—	2	—	1	—	9	—	4	—	2	—	37	2	12	1
	5–9	—	—	5	1	—	—	4	—	12	2	1	—	4	—	12	4	1	—	2	—	7	1	4	—	6	—	5	—	9	—
	10–14	—	—	7	—	3	—	4	—	6	2	—	—	5	—	4	—	3	—	1	—	—	—	3	—	3	—	7	1	8	—
	15–	5	2	16	6	5	1	4	—	16	3	4	—	4	—	6	1	8	—	2	—	1	—	3	—	2	—	8	—	8	—
	All Ages	5	2	33	7	11	2	15	—	47	7	8	1	15	—	39	5	14	—	6	—	17	1	14	—	13	—	57	3	37	1
Five or more (including Institutions) ...	Under 5	2	—	2	2	—	—	2	—	11	1	2	—	2	—	7	—	2	—	1	—	9	—	2	—	2	—	20	4	5	1
	5–9	3	—	8	—	—	—	3	—	10	1	1	—	3	—	12	—	—	—	5	—	6	1	1	—	6	—	9	—	5	—
	10–14	1	—	4	—	—	—	3	—	6	—	—	—	5	—	9	1	2	—	2	—	—	—	1	—	5	—	10	1	5	—
	15–	3	—	13	3	2	1	9	—	25	3	2	—	2	—	15	3	5	2	3	—	7	2	1	—	12	—	22	7	15	1
	All Ages	9	—	27	5	2	1	17	—	52	5	5	—	12	—	43	4	9	2	11	—	22	3	5	—	25	—	61	12	30	2

C.—Cases. D.—Deaths.

TABLE 14A

Percentage distributions of poliomyelitis notifications by numbers of apartments and of occupants in the household
(92 cases with unstated occupants excluded)

Number of Apartments	Age in Years	Poliomyelitis without Paralysis						Poliomyelitis with Paralysis						Not Poliomyelitis					
		Number of Occupants						Number of Occupants						Number of Occupants					
		Under 4	4	5	6	7 –	Total	Under 4	4	5	6	7 –	Total	Under 4	4	5	6	7 –	Total
		%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
One	Under 5	27·0	55·0	—	9·0	9·0	100	21·3	31·9	27·7	6·4	12·8	100	40·7	25·9	22·2	7·4	3·7	100
	5–9	—	(50)	(50)	—	—	100	(14)	(29)	(29)	(14)	(14)	100	35·0	24·0	12·0	18·0	12·0	100
	10–14	—	—	—	—	—	—	—	—	(50)	(50)	—	100	(25)	(25)	(25)	(25)	—	100
	15–	(75)	(25)	—	—	—	100	(60)	(40)	—	—	—	100	31·0	15·0	31·0	15·0	8·0	100
	All Ages	32·0	47·0	11·0	5·0	5·0	100	23·0	31·1	26·2	8·2	11·5	100	36·1	23·0	21·3	13·1	6·6	100
Two	Under 5	4·5	36·4	31·8	13·6	13·6	100	19·1	29·5	24·3	16·2	11·0	100	19·7	32·9	15·8	18·4	13·2	100
	5–9	10·7	32·1	21·4	7·1	28·6	100	30·2	37·2	23·3	4·7	4·7	100	9·4	28·1	31·2	12·5	18·7	100
	10–14	—	36·0	18·0	36·0	9·0	100	36·0	40·0	16·0	4·0	4·0	100	8·3	20·8	29·2	12·5	29·2	100
	15–	33·0	33·0	17·0	8·0	8·0	100	46·2	26·9	23·1	3·8	—	100	41·7	27·1	10·4	6·2	14·6	100
	All Ages	11·0	34·2	23·3	13·7	17·8	100	25·1	31·5	23·2	12·0	8·2	100	22·2	28·9	18·9	13·3	16·7	100
Three	Under 5	3·8	15·4	26·9	15·4	38·5	100	17·0	32·0	20·9	14·4	15·7	100	15·7	19·6	21·6	9·8	33·3	100
	5–9	16·1	3·2	32·3	22·6	25·8	100	16·7	29·6	24·1	11·1	18·5	100	11·1	16·7	25·0	22·2	25·0	100
	10–14	17·4	17·4	39·1	4·3	21·7	100	22·5	30·0	15·0	20·0	12·5	100	16·0	4·0	24·0	32·0	24·0	100
	15–	31·0	36·0	12·0	4·0	16·0	100	26·2	32·3	21·5	7·7	12·3	100	25·4	23·7	25·4	6·8	18·6	100
	All Ages	17·1	17·1	27·6	12·4	25·7	100	19·6	31·4	20·8	13·1	15·1	100	18·1	18·1	24·0	14·6	25·1	100
Four	Under 5	—	(37)	(25)	(12)	(25)	100	6·2	16·0	21·0	11·1	45·7	100	12·5	12·5	8·3	16·7	50·0	100
	5–9	—	25·0	25·0	12·0	37·0	100	12·2	29·3	29·3	17·1	12·2	100	—	7·0	7·0	27·0	60·0	100
	10–14	—	31·0	38·0	8·0	23·0	100	29·2	25·0	16·7	—	29·2	100	18·0	—	18·0	18·0	47·0	100
	15–	29·0	24·0	24·0	12·0	12·0	100	34·0	34·0	12·8	2·1	17·0	100	17·9	14·3	28·6	10·7	28·6	100
	All Ages	9·3	27·8	27·8	11·1	24·1	100	17·1	24·4	20·2	8·8	29·5	100	13·1	9·5	16·7	16·7	44·0	100
Five or more	Under 5	(22)	(22)	(22)	(11)	(22)	100	4·1	22·4	14·3	18·4	40·8	100	—	18·0	18·0	18·0	45·0	100
	5–9	15·0	15·0	15·0	25·0	30·0	100	17·8	22·2	26·7	13·3	20·0	100	—	(14)	—	(14)	(71)	100
	10–14	6·0	19·0	31·0	12·0	31·0	100	13·8	20·7	31·0	—	34·5	100	—	—	(25)	(12)	(62)	100
	15–	10·3	31·0	6·9	10·3	41·4	100	15·9	30·5	18·3	8·5	26·8	100	8·0	8·0	20·0	4·0	60·0	100
	All Ages	12·2	23·0	16·2	14·9	33·8	100	13·2	25·4	21·0	10·7	29·8	100	3·9	9·8	17·6	9·8	58·9	100
All	Under 5	9·2	30·3	23·7	13·2	23·7	100	15·1	27·6	22·1	14·1	21·1	100	19·6	24·9	17·5	14·3	23·8	100
	5–9	11·1	19·2	25·3	16·2	28·3	100	18·9	29·5	25·8	11·6	14·2	100	12·1	19·6	20·6	18·7	29·0	100
	10–14	7·9	23·8	33·3	12·7	22·2	100	24·2	28·3	20·0	8·3	19·2	100	12·8	9·0	24·4	20·5	33·3	100
	15–	26·4	31·0	12·6	8·0	21·8	100	27·1	31·6	18·2	6·2	16·9	100	26·6	20·2	21·4	7·5	24·3	100
	All Ages	14·2	25·8	23·1	12·6	24·3	100	19·5	28·9	21·7	11·3	18·7	100	19·4	20·1	20·3	13·9	26·3	100

TABLE 14B

Percentage distributions of poliomyelitis notifications by numbers of occupants and of apartments in the household (92 cases with unstated occupants excluded)

Number of Occupants	Age in Years	Poliomyelitis without Paralysis						Poliomyelitis with Paralysis						Not Poliomyelitis					
		Number of Apartments						Number of Apartments						Number of Apartments					
		1	2	3	4	5 –	Total	1	2	3	4	5 –	Total	1	2	3	4	5 –	Total
		%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Under Four … …	Under 5 … …	(43)	(14)	(14)	—	(29)	100	13·2	43·4	34·2	6·6	2·6	100	29·7	40·5	21·6	8·1	—	100
	5–9 … …	—	27·0	56·0	—	27·0	100	2·8	36·1	25·0	13·9	22·2	100	46·0	25·0	31·0	—	—	100
	10–14 … …	—	—	(80)	—	(20)	100	—	31·0	31·0	24·1	13·8	100	10·0	20·0	40·0	30·0	—	100
	15– … …	13·0	17·4	34·8	21·7	13·0	100	4·9	19·7	27·9	26·2	21·3	100	8·7	43·5	32·6	10·9	4·3	100
	All Ages … …	13·0	17·4	39·1	10·9	19·6	100	6·9	33·2	30·2	16·3	13·4	100	20·8	37·7	29·2	10·4	1·9	100
Four … … …	Under 5 … …	26·1	34·8	17·4	13·0	8·7	100	10·8	36·7	35·3	9·4	7·9	100	14·9	53·2	21·3	6·4	4·3	100
	5–9 … …	11·0	47·0	5·0	21·0	16·0	100	3·6	28·6	28·6	21·4	17·9	100	19·0	42·9	28·6	4·8	4·8	100
	10–14 … …	—	27·0	27·0	27·0	20·0	100	—	29·4	35·3	17·6	17·6	100	(14)	(71)	(14)	—	—	100
	15– … …	3·7	14·8	33·3	14·8	33·3	100	2·8	9·9	29·6	22·5	35·2	100	5·7	37·1	40·0	11·4	5·7	100
	All Ages … …	10·7	29·8	21·4	17·9	20·2	100	6·3	28·0	32·7	15·7	17·3	100	12·7	47·3	28·2	7·3	4·5	100
Five … … …	Under 5 … …	—	39·0	39·0	11·0	11·0	100	11·7	37·8	28·8	15·3	6·3	100	18·2	36·4	33·3	6·1	6·1	100
	5–9 … …	8·0	24·0	40·0	16·0	12·0	100	4·1	20·4	26·5	24·5	24·5	100	9·1	45·5	40·9	4·5	—	100
	10–14 … …	—	9·5	42·9	23·8	23·8	100	4·2	16·7	25·0	16·7	37·5	100	5·0	37·0	32·0	16·0	11·0	100
	15– … …	—	18·0	27·0	36·0	18·0	100	—	14·6	34·1	14·6	36·6	100	10·8	13·5	40·5	21·6	13·5	100
	All Ages … …	2·7	22·7	38·7	20·0	16·0	100	7·1	27·6	28·9	17·3	19·1	100	11·7	30·6	36·9	12·6	8·1	100
Six … … …	Under 5 … …	10·0	30·0	40·0	10·0	10·0	100	4·2	39·4	31·0	12·7	12·7	100	7·4	51·9	18·5	14·8	7·4	100
	5–9 … …	—	12·0	44·0	12·0	31·0	100	4·5	9·1	27·3	31·8	27·3	100	15·0	20·0	40·0	20·0	5·0	100
	10–14 … …	—	(50)	(12)	(12)	(25)	100	10·0	10·0	80·0	—	—	100	6·0	19·0	50·0	19·0	6·0	100
	15– … …	—	(14)	(14)	(29)	(43)	100	—	7·0	36·0	7·0	50·0	100	15·0	23·0	31·0	23·0	8·0	100
	All Ages … …	2·4	24·4	31·7	14·6	26·8	100	4·3	27·4	35·0	14·5	18·8	100	10·5	31·6	32·9	18·4	6·6	100
Seven or more …	Under 5 … …	6·0	17·0	56·0	11·0	11·0	100	5·7	17·9	22·6	34·9	18·9	100	2·2	22·2	37·8	26·7	11·1	100
	5–9 … …	—	28·6	28·6	21·4	21·4	100	3·7	7·4	37·0	18·5	33·3	100	6·5	19·4	29·0	29·0	16·1	100
	10–14 … …	—	7·0	36·0	21·0	36·0	100	—	4·3	21·7	30·4	43·5	100	—	26·9	23·1	30·8	19·2	100
	15– … …	—	5·0	21·0	11·0	63·0	100	—	—	21·1	21·1	57·9	100	2·4	16·7	26·2	19·0	35·7	100
	All Ages … …	1·3	16·5	34·2	16·5	31·6	100	3·6	11·3	24·2	29·4	31·4	100	2·8	20·8	29·9	25·7	20·8	100
All … … …	Under 5 … …	14·5	28·9	34·2	10·5	11·8	100	9·3	34·5	30·4	16·1	9·7	100	14·3	40·2	27·0	12·7	5·8	100
	5–9 … …	4·0	28·3	31·3	16·2	20·2	100	3·7	22·6	28·4	21·6	23·7	100	15·9	29·9	33·6	14·0	6·5	100
	10–14 … …	—	17·5	36·5	20·6	25·4	100	1·7	20·7	33·1	19·8	24·8	100	5·1	30·8	32·1	21·8	10·3	100
	15– … …	4·6	13·8	28·7	19·5	33·3	100	2·2	11·5	28·8	20·8	36·7	100	7·5	27·7	34·1	16·2	14·5	100
	All Ages … …	5·8	22·5	32·3	16·6	22·8	100	5·9	25·7	30·0	18·5	19·9	100	11·2	32·9	31·3	15·4	9·3	100

TABLE 15

Poliomyelitis notifications subdivided by sanitary condition of home

Final Diagnosis	Good Sanitary Condition						Fair Sanitary Conditions						Bad Sanitary Condition						Sanitary Conditions Unstated						Totals	
	Poliomyelitis				Not Polio-myelitis		Poliomyelitis				Not Polio-myelitis		Poliomyelitis				Not Polio-myelitis		Poliomyelitis				Not Polio-myelitis			
	Without Paralysis		With Paralysis				Without Paralysis		With Paralysis				Without Paralysis		With Paralysis				Without Paralysis		With Paralysis					
Age in Years	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.
Under 1	3	1	37	3	19	1	1	—	33	4	9	3	1	—	15	1	5	1	—	—	—	—	5	—	128	14
1	6	—	83	5	23	3	6	—	49	1	20	1	3	—	25	3	3	—	—	—	—	—	5	2	223	15
2	5	—	63	6	18	—	5	—	32	3	20	—	2	—	17	—	3	—	—	—	—	—	4	—	169	9
3	17	—	50	4	20	1	9	1	33	—	16	2	2	—	11	—	4	—	1	—	3	—	3	—	169	8
4	8	—	32	3	16	1	4	—	14	1	7	1	3	—	6	—	4	1	1	—	2	—	4	—	101	6
Under 5	39	1	265	21	96	6	25	1	161	9	72	6	11	—	74	4	19	2	2	—	5	—	21	2	790	52
5–9	61	—	140	17	56	3	27	—	34	8	42	2	10	—	12	2	12	—	1	—	4	—	10	—	409	32
10–14	35	—	82	6	47	1	21	—	31	1	25	1	7	—	7	—	5	—	2	—	2	1	15	—	279	10
15–19	19	—	49	10	32	1	7	—	15	3	17	3	2	—	4	—	—	—	1	—	1	—	12	—	159	17
20–29	26	—	64	13	29	2	7	—	8	2	15	1	4	—	8	2	5	—	2	—	4	2	11	—	183	22
30–	16	2	63	15	39	6	3	—	9	—	28	3	1	—	4	2	6	—	—	—	1	—	12	1	182	29
All Ages	196	3	663	82	299	19	90	1	258	23	199	16	35	—	109	10	47	2	8	—	17	3	81	3	2,002	162

D.—Deaths.

TABLE 15A

Percentage of cases at stated ages living in houses of stated sanitary condition (unstated sanitary conditions excluded)

Age in Years	Poliomyelitis								Not Poliomyelitis			
	Without Paralysis				With Paralysis							
	Good	Fair	Poor	Total	Good	Fair	Poor	Total	Good	Fair	Poor	Total
	%	%	%	%	%	%	%	%	%	%	%	%
Under 1	(60)	(20)	(20)	100	43·5	38·8	17·6	100	57·6	27·3	15·1	100
1	(40)	(40)	(20)	100	52·9	31·2	15·9	100	50·0	43·5	6·5	100
2	(42)	(42)	(16)	100	56·2	28·6	15·2	100	43·9	48·8	7·3	100
3	60·7	32·1	7·1	100	53·2	35·1	11·7	100	50·0	40·0	10·0	100
4	(53)	(27)	(20)	100	61·5	26·9	11·5	100	59·3	25·9	14·8	100
Under 5	52·0	33·3	14·7	100	53·0	32·3	14·8	100	51·3	38·5	10·2	100
5–9	62·2	27·6	10·2	100	75·3	18·3	6·4	100	50·9	38·2	10·9	100
10–14	55·6	33·3	11·1	100	68·3	25·8	5·8	100	61·0	32·5	6·5	100
15–19	67·9	25·0	7·1	100	72·1	22·1	5·9	100	65·3	34·7	—	100
20–29	70·3	18·9	10·8	100	80·0	10·0	10·0	100	59·2	30·6	10·2	100
30–	80·0	15·0	5·0	100	82·9	11·8	5·3	100	53·4	38·4	8·2	100
All Ages	61·1	28·0	10·9	100	64·4	25·0	10·6	100	54·9	36·5	8·6	100

TABLE 16

Poliomyelitis notifications subdivided by social class of chief wage earner

Age in Years	Social Classes 1 and 2						Social Class 3						Social Class 4						Social Class 5						Social Class Unstated					
	Poliomyelitis				Not Polio-myelitis		Poliomyelitis				Not Polio-myelitis		Poliomyelitis				Not Polio-myelitis		Poliomyelitis				Not Polio-myelitis		Poliomyelitis				Not Polio-myelitis	
	Without Paralysis		With Paralysis				Without Paralysis		With Paralysis				Without Paralysis		With Paralysis				Without Paralysis		With Paralysis				Without Paralysis		With Paralysis			
	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.
Under 1	1	—	4	—	1	1	1	—	43	5	16	—	1	1	23	2	12	3	2	—	15	1	3	1	—	—	—	—	6	—
1	—	—	13	—	4	1	5	—	73	3	16	2	8	—	46	5	10	1	1	—	25	1	16	—	1	—	—	—	5	2
2	—	—	11	1	4	—	4	—	47	2	17	—	7	—	38	5	10	—	1	—	15	1	11	—	—	—	1	—	3	—
3	5	—	18	1	3	—	14	1	43	1	20	—	9	—	24	1	12	3	1	—	12	1	5	—	—	—	—	—	3	—
4	3	—	5	1	4	1	10	—	32	3	12	1	3	—	12	—	8	—	—	—	4	—	4	—	—	—	1	—	3	—
Under 5	9	—	51	3	16	3	34	1	238	14	81	3	28	1	143	13	52	7	5	—	71	4	39	1	1	—	2	—	20	2
5–9	18	—	45	6	7	—	46	—	83	11	37	5	23	—	44	7	30	—	11	—	18	3	33	—	1	—	—	—	13	—
10–14	15	—	26	5	5	—	23	—	59	3	33	1	14	—	26	—	26	—	11	—	8	—	12	1	2	—	3	—	16	—
15–19	7	—	15	4	4	1	16	—	31	7	24	1	3	—	15	1	12	—	3	—	5	1	10	2	—	—	3	—	11	—
20–29	5	—	29	8	3	1	20	—	38	9	20	1	9	—	13	2	17	1	3	—	3	—	9	—	2	—	1	—	11	—
30–	4	—	29	9	5	—	10	2	26	4	37	5	3	—	18	4	18	1	2	—	3	—	12	2	1	—	1	—	13	2
All Ages	58	—	195	35	40	5	149	3	475	48	232	16	80	1	259	27	155	9	35	—	108	8	115	6	7	—	10	—	84	4

C.—Cases. D.—Deaths.

TABLE 16A

Percentage distributions of poliomyelitis notifications by social class of chief wage earner (unstated social classes excluded)

Age in Years	Poliomyelitis without Paralysis					Poliomyelitis with Paralysis					Not Poliomyelitis				
	Social Classes					Social Classes					Social Classes				
	1 and 2	3	4	5	Total	1 and 2	3	4	5	Total	1 and 2	3	4	5	Total
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Under 1	(20)	(20)	(20)	(40)	100	4·7	50·6	27·1	17·6	100	3·1	50·0	37·5	9·4	100
1	—	36·0	57·0	7·0	100	8·3	46·5	29·3	15·9	100	8·7	34·8	21·7	34·8	100
2	—	33·0	58·0	8·0	100	9·9	42·3	34·2	13·5	100	9·5	40·5	23·8	26·2	100
3	17·2	48·3	31·0	3·4	100	18·6	44·3	24·7	12·4	100	7·5	50·0	30·0	12·5	100
4	19·0	62·0	19·0	—	100	9·4	60·4	22·6	7·5	100	14·3	42·9	28·6	14·3	100
Under 5	11·8	44·7	36·8	6·6	100	10·1	47·3	28·4	14·1	100	8·5	43·1	27·7	20·7	100
5–9	18·4	46·9	23·5	11·2	100	23·7	43·7	23·2	9·5	100	6·5	34·6	28·0	30·8	100
10–14	23·8	36·5	22·2	17·5	100	21·8	49·6	21·8	6·7	100	6·6	43·4	34·2	15·8	100
15–19	24·1	55·2	10·3	10·3	100	22·7	47·0	22·7	7·6	100	8·0	48·0	24·0	20·0	100
20–29	13·5	54·1	24·3	8·1	100	34·9	45·8	15·7	3·6	100	6·1	40·8	34·7	18·4	100
30–	21·0	53·0	16·0	11·0	100	38·2	34·2	23·7	3·9	100	6·9	51·4	25·0	16·7	100
All Ages	18·0	46·3	24·8	10·9	100	18·8	45·8	25·0	10·4	100	7·4	42·8	28·6	21·2	100

TABLE 17

Poliomyelitis notifications showing numbers of other cases associated with each notification

Age in Years	No Associated Cases						One Associated Case						Two Associated Cases						3 + Associated Cases					
	Poliomyelitis				Not Polio-myelitis		Poliomyelitis				Not Polio-myelitis		Poliomyelitis				Not Polio-myelitis		Poliomyelitis				Not Polio-myelitis	
	Without Paralysis		With Paralysis				Without Paralysis		With Paralysis				Without Paralysis		With Paralysis				Without Paralysis		With Paralysis			
	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.
Under 1	4	1	73	7	35	4	1	—	12	1	2	1	—	—	—	—	1	—	—	—	—	—	—	—
1	13	—	134	9	50	6	2	—	19	—	1	—	—	—	4	—	—	—	—	—	—	—	—	—
2	12	—	96	8	43	—	—	—	13	—	2	—	—	—	1	1	—	—	—	—	2	—	—	—
3	24	1	77	3	38	3	3	—	14	—	5	—	1	—	5	1	—	—	1	—	1	—	—	—
4	12	—	45	4	31	2	2	—	6	—	—	—	2	—	2	—	—	—	—	—	1	—	—	—
Under 5	65	2	425	31	197	15	8	—	64	1	10	1	3	—	12	2	1	—	1	—	4	—	—	—
5–9	78	—	145	20	115	5	14	—	34	5	5	—	4	—	8	2	—	—	3	—	3	—	—	—
10–14	48	—	107	6	88	2	10	—	15	2	4	—	1	—	—	—	—	—	6	—	—	—	—	—
15–19	22	—	54	8	61	4	6	—	12	4	—	—	1	—	2	1	—	—	—	—	1	—	—	—
20–29	33	—	73	17	60	3	5	—	9	1	—	—	—	—	2	1	—	—	1	—	—	—	—	—
30–	18	2	61	12	83	10	2	—	7	2	2	—	—	—	3	1	—	—	—	—	6	2	—	—
All Ages	264	4	865	94	604	39	45	—	141	15	21	1	9	—	27	7	1	—	11	—	14	2	—	—

D.—Deaths.

TABLE 17A

Percentage distributions of poliomyelitis notifications by number of associated cases

Age in Years	Poliomyelitis without Paralysis				Poliomyelitis with Paralysis				Not Poliomyelitis			
	Number of Associated Cases				Number of Associated Cases				Number of Associated Cases			
	None	One	Two +	Total	None	One	Two +	Total	None	One	Two +	Total
	%	%	%	%	%	%	%	%	%	%	%	%
Under 1	(80)	(20)	—	100	85·9	14,1	—	100	92·1	5·3	2·6	100
1	87·0	13·0	—	100	85·4	12·1	2·5	100	98·0	2·0	—	100
2	100	—	—	100	85·7	11·6	2·7	100	95·6	4·4	—	100
3	82·8	10·3	6·9	100	79·4	14·4	6·2	100	88·4	11·6	—	100
4	75·0	12·5	12·5	100	83·3	11·1	5·6	100	100	—	—	100
Under 5	84·4	10·4	5·2	100	84·2	12·7	3·2	100	94·7	4·8	0·5	100
5–9	78·8	14·1	7·1	100	76·3	17·9	5·8	100	95·8	4·2	—	100
10–14	73·8	15·4	10·8	100	87·7	12·3	—	100	95·7	4·3	—	100
15–19	75·9	20·7	3·4	100	78·3	17·4	4·3	100	100	—	—	100
20–29	84·6	12·8	2·6	100	86·9	10·7	2·4	100	100	—	—	100
30–	90·0	10·0	—	100	79·2	9·1	11·7	100	97·6	2·4	—	100
All Ages	80·2	13·7	6·1	100	82·6	13·5	3·9	100	96·5	3·4	0·2	100

TABLE 18

Poliomyelitis notifications tabulated by month of onset of illness in 1947

Age in Years	June						July						August						September					
	Poliomyelitis				Not Polio-myelitis		Poliomyelitis				Not Polio-myelitis		Poliomyelitis				Not Polio-myelitis		Poliomyelitis				Not Polio-myelitis	
	Without Paralysis		With Paralysis				Without Paralysis		With Paralysis				Without Paralysis		With Paralysis				Without Paralysis		With Paralysis			
	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.
Under 1	—	—	2	—	—	—	—	—	10	—	—	—	3	—	25	4	11	—	—	—	27	2	12	1
1	—	—	5	—	1	—	1	—	23	—	2	—	7	—	52	1	27	2	4	—	49	6	10	—
2	—	—	3	—	—	—	1	—	17	2	2	—	5	—	46	5	21	—	4	—	24	—	15	—
3	—	—	6	—	—	—	2	—	11	1	3	—	13	1	45	2	20	3	8	—	26	3	8	—
4	—	—	1	—	—	—	1	—	4	1	1	—	4	—	26	—	12	—	11	—	14	1	9	—
Under 5	—	—	17	—	1	—	5	—	65	4	8	—	32	1	194	12	91	5	27	—	140	12	54	1
5–9	1	—	5	1	—	—	5	—	20	5	3	—	29	—	70	10	45	3	44	—	51	7	30	1
10–14	—	—	1	—	—	—	2	—	15	1	1	—	22	—	41	3	35	—	27	—	34	4	30	1
15–19	—	—	—	—	1	—	—	—	6	1	4	2	14	—	21	3	15	—	9	—	24	5	23	1
20–29	—	—	1	—	—	—	1	—	7	—	4	—	12	—	27	8	14	1	17	—	30	6	24	—
30–	—	—	1	1	1	—	—	—	6	—	3	1	10	1	27	5	23	3	7	—	25	6	32	4
All Ages	1	—	25	2	3	—	13	—	119	11	23	3	119	2	380	41	223	12	131	—	304	40	193	8

Age in Years	October						November						December*						Unstated					
	Poliomyelitis				Not Polio-myelitis		Poliomyelitis				Not Polio-myelitis		Poliomyelitis				Not Polio-myelitis		Poliomyelitis				Not Polio-myelitis	
	Without Paralysis		With Paralysis				Without Paralysis		With Paralysis				Without Paralysis		With Paralysis				Without Paralysis		With Paralysis			
	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.
Under 1	1	—	15	1	8	2	—	—	3	—	4	1	—	—	1	—	2	—	1	1	2	1	1	—
1	1	—	17	1	7	4	1	—	8	—	3	—	1	—	2	—	1	—	—	—	1	—	—	—
2	2	—	16	2	6	—	—	—	5	—	1	—	—	—	1	—	—	—	—	—	—	—	—	—
3	3	—	7	—	7	—	3	—	—	—	4	—	—	—	2	—	1	—	—	—	—	—	—	—
4	—	—	7	—	6	1	—	—	2	—	2	—	—	—	—	—	1	—	—	—	—	—	—	—
Under 5	7	—	62	4	34	7	4	—	18	1	14	1	1	—	6	—	5	—	1	1	3	1	1	—
5–9	14	—	28	1	23	1	5	—	14	2	7	—	1	—	1	1	10	—	—	—	1	—	2	—
10–14	12	—	20	—	13	1	1	—	7	—	7	—	1	—	3	—	6	—	—	—	1	—	—	—
15–19	5	—	11	3	7	—	—	—	6	1	4	—	1	—	1	—	7	—	—	—	—	—	—	—
20–29	4	—	12	3	11	2	4	—	5	1	3	—	1	—	1	—	4	—	—	—	1	1	—	—
30–	1	—	11	1	18	2	1	1	5	4	3	—	1	—	2	—	4	—	—	—	—	—	1	—
All Ages	43	—	144	12	106	13	15	1	55	9	38	1	6	—	14	1	36	—	1	1	6	2	4	—

*Including 8 cases with onsets early in 1948. D.—Deaths.

TABLE 18A

Percentage distributions of poliomyelitis notifications by month of onset of illness (11 unstated onsets excluded)

Age in Years	Poliomyelitis without Paralysis								Poliomyelitis with Paralysis								Not Poliomyelitis							
	Month of Onset of Illness (1947)								Month of Onset of Illness (1947)								Month of Onset of Illness (1947)							
	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Under 1	—	—	(75)	—	(25)	—	—	100	2·4	12·0	30·1	32·5	18·1	3·6	1·2	100	—	—	29·7	32·4	21·6	10·8	5·4	100
1	—	7·0	47·0	27·0	7·0	7·0	7·0	100	3·2	14·7	33·3	31·4	10·9	5·1	1·3	100	2·0	3·9	52·9	19·6	13·7	5·9	2·0	100
2	—	8·0	42·0	33·0	17·0	—	—	100	2·7	15·2	41·1	21·4	14·3	4·5	0·9	100	—	4·4	46·7	33·3	13·3	2·2	—	100
3	—	6·9	44·8	27·6	10·3	10·3	—	100	6·2	11·3	46·4	26·8	7·2	—	2·1	100	—	7·0	46·5	18·6	16·3	9·3	2·3	100
4	—	6·0	25·0	69·0	—	—	—	100	1·9	7·4	48·1	25·9	13·0	3·7	—	100	—	3·2	38·7	29·0	19·4	6·5	3·2	100
Under 5	—	6·6	42·1	35·5	9·2	5·3	1·3	100	3·4	12·9	38·6	27·9	12·4	3·6	1·2	100	0·5	3·9	44·0	26·1	16·4	6·8	2·4	100
5–9	1·0	5·1	29·3	44·4	14·1	5·1	1·0	100	2·6	10·6	37·0	27·0	14·8	7·4	0·5	100	—	2·5	38·1	25·4	19·5	5·9	8·5	100
10–14	—	3·1	33·8	41·5	18·5	1·5	1·5	100	0·8	12·4	33·9	28·1	16·5	5·8	2·5	100	—	1·1	38·0	32·6	14·1	7·6	6·5	100
15–19	—	—	48·3	31·0	17·2	—	3·4	100	—	8·7	30·4	34·8	15·9	8·7	1·4	100	1·6	6·6	24·6	37·7	11·5	6·6	11·5	100
20–29	—	2·6	30·8	43·6	10·3	10·3	2·6	100	1·2	8·4	32·5	36·1	14·5	6·0	1·2	100	—	6·7	23·3	40·0	18·3	5·0	6·7	100
30–	—	—	50·0	35·0	5·0	5·0	5·0	100	1·3	7·8	35·1	32·5	14·3	6·5	2·6	100	1·2	3·6	27·4	38·1	21·4	3·6	4·8	100
All Ages	0·3	4·0	36·3	39·9	13·1	4·6	1·8	100	2·4	11·4	36·5	29·2	13·8	5·3	1·3	100	0·5	3·7	35·9	31·0	17·0	6·1	5·8	100

TABLE 19

Poliomyelitis notifications subdivided by interval in completed days between onset of illness and onset of fever

Age in Years	No Fever Recorded						Interval under 1 Day						Interval 1 Day						Interval 2–4 Days						Interval 5 Days						Interval Unstated					
	Poliomyelitis				Not Polio-myelitis		Poliomyelitis				Not Polio-myelitis		Poliomyelitis				Not Polio-myelitis		Poliomyelitis				Not Polio-myelitis		Poliomyelitis				Not Polio-myelitis		Poliomyelitis				Not Polio-myelitis	
	Without Paralysis		With Paralysis				Without Paralysis		With Paralysis				Without Paralysis		With Paralysis				Without Paralysis		With Paralysis				Without Paralysis		With Paralysis				Without Paralysis		With Paralysis			
	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.
Under 1	—	–	3	–	8	1	3	–	36	2	8	1	—	–	4	1	1	–	—	–	2	–	1	–	—	–	2	–	2	2	2	1	38	5	18	1
1	4	–	17	–	16	–	6	–	80	4	8	1	—	–	5	3	1	–	—	–	3	–	—	–	1	–	3	–	1	–	4	–	49	2	25	5
2	1	–	8	–	16	–	8	–	49	3	13	–	—	–	8	1	1	–	1	–	2	–	1	–	—	–	4	1	—	–	2	–	41	4	14	–
3	5	–	1	–	17	1	13	–	44	1	9	–	2	–	8	1	1	–	1	–	2	–	—	–	1	1	3	1	1	–	7	–	39	1	15	2
4	—	–	—	–	12	1	9	–	24	2	8	–	—	–	1	–	1	–	1	–	3	–	—	–	—	–	1	–	1	–	6	–	25	2	9	1
Under 5	10	–	29	–	69	3	39	–	233	12	46	2	2	–	26	6	5	–	3	–	12	–	2	–	2	1	13	2	5	2	21	1	192	14	81	9
5–9	3	–	3	–	29	–	48	–	80	10	22	1	8	–	8	1	3	–	6	–	18	4	—	–	4	–	4	1	—	–	30	–	77	11	66	4
10–14	1	–	6	–	31	–	33	–	63	7	16	–	7	–	4	–	1	–	4	–	4	–	4	–	—	–	—	–	—	–	20	–	45	1	40	2
15–19	1	–	2	–	23	–	10	–	33	5	9	1	5	–	3	–	1	–	2	–	5	1	1	1	2	–	2	–	—	–	9	–	24	7	27	2
20–29	1	–	2	–	28	1	22	–	34	6	9	–	—	–	3	1	3	–	2	–	7	–	1	–	2	–	4	1	1	1	12	–	34	11	18	1
30–	—	–	3	–	42	5	7	–	35	7	11	2	3	1	3	–	3	–	—	–	3	2	1	–	3	1	3	–	1	–	7	–	30	8	27	3
All Ages	16	–	45	–	222	9	159	–	478	47	113	6	25	1	47	8	16	–	17	–	49	7	9	1	13	2	26	4	7	3	99	1	402	52	259	21

C.—Cases.   D.—Deaths.

TABLE 19A

Percentage distributions of poliomyelitis notifications by intervals between onset of disease and onset of fever (unstated intervals omitted)

Age in Years	Poliomyelitis without Paralysis						Poliomyelitis with Paralysis						Not Poliomyelitis					
	Intervals in Days						Intervals in Days						Intervals in Days					
	N *	0	1	2–4	5–	Total	N *	0	1	2–4	5–	Total	N *	0	1	2–4	5–	Total
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Under 1	—	(100)	—	—	—	100	6·4	76·6	8·5	4·3	4·3	100	40·0	40·0	5·0	5·0	10·0	100
1	36·0	55·0	—	—	9·0	100	15·7	74·1	4·6	2·8	2·8	100	61·5	30·8	3·8	—	3·8	100
2	10·0	80·0	—	10·0	—	100	11·3	69·0	11·3	2·8	5·6	100	51·6	41·9	3·2	3·2	—	100
3	22·7	59·1	9·1	4·5	4·5	100	1·7	75·9	13·8	3·4	5·2	100	60·7	32·1	3·6	—	3·6	100
4	—	90·0	—	10·0	—	100	—	82·8	3·4	10·3	3·4	100	54·5	36·4	4·5	—	4·5	100
Under 5	17·9	69·6	3·6	5·4	3·6	100	9·3	74·4	8·3	3·8	4·2	100	54·3	36·2	3·9	1·6	3·9	100
5–9	4·3	69·6	11·6	8·7	5·8	100	2·7	70·8	7·1	15·9	3·5	100	53·7	40·7	5·6	—	—	100
10–14	2·2	73·3	15·6	8·9	—	100	7·8	81·8	5·2	5·2	—	100	59·6	30·8	1·9	7·7	—	100
15–19	5·0	50·0	25·0	10·0	10·0	100	4·4	73·3	6·7	11·1	4·4	100	67·6	26·5	2·9	2·9	—	100
20–29	3·7	81·5	—	7·4	7·4	100	4·0	68·0	6·0	14·0	8·0	100	66·7	21·4	7·1	2·4	2·4	100
30–	—	54·0	23·0	—	23·0	100	6·4	74·5	6·4	6·4	6·4	100	72·4	19·0	5·2	1·7	1·7	100
All Ages	7·0	69·1	10·9	7·4	5·7	100	7·0	74·1	7·3	7·6	4·0	100	60·5	30·8	4·4	2·5	1·9	100

N * : Onset of fever not recorded.

TABLE 20

1,047 cases accepted as poliomyelitis with paralysis subdivided by intervals between onset of illness and onset of paralysis

Age in Years	Intervals in Days																Per cent. of all Cases with Stated Intervals							
	Under 1		1		2		3		4		5–9		10 +		Unstated		Intervals in Days							
	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Under 1	1	2	3	4	5–9	10+	Total
Under 1	12	2	7	1	14	2	10	—	8	—	20	1	4	—	10	2	16·0	9·3	18·7	13·3	10·7	26·7	5·3	100
1	29	3	20	3	29	2	15	—	15	—	35	1	9	—	5	—	19·1	13·2	19·1	9·9	9·9	23·0	5·9	100
2	9	2	17	2	15	—	16	2	12	1	26	1	10	1	7	—	8·6	16·2	14·3	15·2	11·4	24·8	9·5	100
3	10	1	10	—	18	—	16	1	8	—	22	1	10	—	3	1	10·6	10·6	19·1	17·0	8·5	23·4	10·6	100
4	3	—	2	—	11	1	8	—	9	—	14	—	4	2	3	1	5·9	3·9	21·6	15·7	17·6	27·5	7·8	100
Under 5	63	8	56	6	87	5	65	3	52	1	117	4	37	3	28	4	13·2	11·7	18·2	13·6	10·9	24·5	7·8	100
5–9	13	1	14	2	24	3	32	7	18	3	59	9	16	1	14	1	7·4	8·0	13·6	18·2	10·2	33·5	9·1	100
10–14	11	2	12	1	18	1	18	1	15	—	32	1	9	1	7	1	9·6	10·4	15·7	15·7	13·0	27·8	7·8	100
15–19	6	1	12	3	9	3	12	2	7	1	12	—	6	—	5	3	9·4	18·7	14·1	18·7	10·9	18·7	9·4	100
20–29	8	—	10	5	11	3	13	5	8	—	26	2	6	3	2	1	9·8	12·2	13·4	15·9	9·8	31·7	7·3	100
30–	8	1	6	1	7	2	11	5	5	2	21	4	13	2	6	—	11·3	8·5	9·9	15·5	7·0	29·6	18·3	100
All Ages	109	13	100	18	156	17	151	23	105	7	267	20	87	10	62	10	11·1	11·2	15·8	15·3	10·7	27·1	8·8	100

D.—Deaths.

TABLE 21

Poliomyelitis notifications subdivided by intervals between onset of illness and notification

Age in Years	Intervals under 2 Days						Intervals 2 or 3 Days						Intervals 4 or 5 Days						Intervals 6 or 7 Days					
	Poliomyelitis				Not Polio-myelitis		Poliomyelitis				No Polio-myelitis		Poliomyelitis				Not Polio-myelitis		Poliomyelitis				Not Polio-myelitis	
	Without Paralysis		With Paralysis				Without Paralysis		With Paralysis				Without Paralysis		With Paralysis				Without Paralysis		With Paralysis			
	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.
Under 1	1	—	9	2	10	1	3	—	20	2	15	1	—	—	18	1	4	—	—	—	12	1	5	1
1	3	—	13	1	17	2	4	—	42	6	7	1	2	—	26	1	12	—	2	—	34	1	4	1
2	3	—	13	2	84	—	4	—	22	2	10	—	1	—	28	3	5	—	2	—	12	—	—	—
3	6	—	11	—	14	1	8	—	29	1	10	1	3	—	20	1	5	—	5	1	8	—	7	1
4	2	—	6	1	17	1	5	—	19	1	5	—	2	—	15	—	3	1	1	—	6	—	1	—
Under 5	15	—	52	6	82	5	24	—	132	12	47	3	8	—	107	6	29	1	10	1	72	2	17	2
5–9	22	—	23	3	48	1	34	—	61	9	33	2	13	—	32	5	22	1	15	—	31	6	7	—
10–14	14	—	9	2	29	—	22	—	37	3	17	1	12	—	27	1	26	1	5	—	22	1	8	—
15–19	10	—	6	1	21	—	6	—	23	9	20	1	7	—	13	1	9	1	4	—	10	1	4	—
20–29	5	—	7	1	16	—	13	—	25	9	14	—	10	—	19	4	12	—	5	—	9	—	6	—
30–	1	—	6	1	22	2	4	—	15	5	16	2	3	—	14	5	13	—	5	—	14	3	8	1
All Ages	67	—	103	14	218	8	103	—	293	47	147	9	53	—	121	22	111	4	44	1	158	13	50	3

Age in Years	Intervals 8 or 9 Days						Intervals 10–14 Days						Intervals 15 + Days						Interval Unstated					
	Poliomyelitis				Not Polio-myelitis		Poliomyelitis				Not Polio-myelitis		Poliomyelitis				Not Polio-myelitis		Poliomyelitis				Not Polio-myelitis	
	Without Paralysis		With Paralysis				Without Paralysis		With Paralysis				Without Paralysis		With Paralysis				Without Paralysis		With Paralysis			
	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.
Under 1	—	—	5	—	1	1	—	—	9	—	—	—	—	—	10	1	2	1	1	1	2	1	1	—
1	—	—	13	—	3	—	3	—	13	—	6	2	—	—	12	—	2	—	1	—	4	—	—	—
2	—	—	13	—	1	—	—	—	13	1	2	—	—	—	10	—	3	—	2	—	1	1	—	—
3	2	—	11	—	—	—	—	—	8	1	3	—	3	—	8	1	3	1	2	—	2	—	1	—
4	2	—	2	—	4	—	3	—	1	—	—	—	1	—	4	2	1	—	—	—	1	—	—	—
Under 5	4	—	44	—	9	1	6	—	44	2	11	2	4	—	44	4	11	2	6	1	10	2	2	—
5–9	7	—	16	3	2	—	1	—	12	—	4	—	7	—	11	—	2	1	—	—	4	1	2	—
10–14	7	—	9	—	4	—	2	—	7	—	5	—	2	—	9	1	3	—	—	—	2	—	—	—
15–19	—	—	6	—	3	—	1	—	5	—	3	1	—	—	5	1	1	1	1	—	1	—	—	—
20–29	5	—	7	—	3	1	1	—	9	3	4	2	—	—	7	1	5	—	—	—	1	1	—	—
30–	1	—	6	1	6	1	3	—	9	1	10	1	3	2	12	1	8	3	—	—	1	—	2	—
All Ages	24	—	88	4	27	3	14	—	86	6	37	6	16	2	88	8	30	7	8	1	19	4	6	—

D.—Deaths.

TABLE 21A

Percentage distributions of poliomyelitis notifications by intervals between onset of illness and notification (unstated intervals excluded)

Age in Years	Poliomyelitis without Paralysis								Poliomyelitis with Paralysis								Not Poliomyelitis							
	Intervals in Days								Intervals in Days								Intervals in Days							
	Under 2	2 or 3	4 or 5	6 or 7	8 or 9	10–14	15 +	Total	Under 2	2 or 3	4 or 5	6 or 7	8 or 9	10–14	15 +	Total	Under 2	2 or 3	4 or 5	6 or 7	8 or 9	10–14	15 +	Total
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Under 1	(25)	(75)	—	—	—	—	—	100	10·8	24·1	21·7	14·5	6·0	10·8	12·0	100	27·0	40·5	10·8	13·5	2·7	—	5·4	100
1	21·0	29·0	14·0	14·0	—	21·0	—	100	8·5	27·5	17·0	22·2	8·5	8·5	7·8	100	33·3	13·7	23·5	7·8	5·9	11·8	3·9	100
2	30·0	40·0	10·0	20·0	—	—	—	100	11·7	19·8	25·2	10·8	11·7	11·7	9·0	100	53·3	22·2	11·1	—	2·2	4·4	6·7	100
3	22·2	29·6	11·1	18·5	7·4	—	11·1	100	11·6	30·5	21·1	8·4	11·6	8·4	8·4	100	33·3	23·8	11·9	16·7	—	7·1	7·1	100
4	12·0	31·0	12·0	6·0	12·0	19·0	6·0	100	11·3	35·8	28·3	11·3	3·8	1·9	7·5	100	54·8	16·1	9·7	3·2	12·9	—	3·2	100
Under 5	21·1	33·8	11·3	14·1	5·6	8 5	5·6	100	10·5	26·7	21·6	14·5	8·9	8·9	8·9	100	39·8	22·8	14·1	8·3	4·4	5·3	5·3	100
5–9	22·2	34·3	13·1	15·2	7·1	1·0	7·1	100	12·4	32·8	17·2	16·7	8·6	6·5	5·9	100	40·7	28·0	18·6	5·9	1·7	3·4	1·7	100
10–14	21·9	34·4	18·7	7·8	10·9	3·1	3·1	100	7·5	30·8	22·5	18·3	7·5	5·8	7·5	100	31·5	18·5	28·3	8·7	4·3	5·4	3·3	100
15–19	35·7	21·4	25·0	14·3	—	3·6	—	100	8·8	33·8	19·1	14·7	8·8	7·4	7·4	100	34·4	32·8	14·8	6·6	4·9	4·9	1·6	100
20–19	12·8	33·3	25·6	12·8	12·8	2·6	—	100	8·4	30·1	22·9	10·8	8·4	10·8	8·4	100	26·7	23·3	20·0	10·0	5·0	6·7	8·3	100
30–	5·0	20·0	15·0	25·0	5·0	15·0	15·0	100	7·9	19·7	18·4	18·4	7·9	11·8	15·8	100	26·5	19·3	15·7	9·6	7·2	12·0	9·6	100
All Ages	20·9	32·1	16·5	13·7	7·5	4·4	5·0	100	10·0	28·5	20·6	15·4	8·6	8·4	8·6	100	35·2	23·7	17·9	8·1	4·4	6·0	4·8	100

TABLE 22

Poliomyelitis notifications tabulated by duration of stay in I.D. hospital

Age in Years	Not Admitted						Stay under 10 Days						Stay 10–19 Days						Stay 20–29 Days						Stay 30–39 Days					
	Poliomyelitis				Not Polio-myelitis		Poliomyelitis				Not Polio-myelitis		Poliomyelitis				Not Polio-myelitis		Poliomyelitis				Not Polio-myelitis		Poliomyelitis				Not Polio-myelitis	
	Without Paralysis		With Paralysis				Without Paralysis		With Paralysis				Without Paralysis		With Paralysis				Without Paralysis		With Paralysis				Without Paralysis		With Paralysis			
	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.
Under 1	—	—	6	1	—	—	—	—	8	6	11	2	1	—	8	—	14	1	2	—	21	1	8	2	1	—	14	—	2	—
1	—	—	6	—	1	—	—	—	14	8	19	3	4	—	13	—	20	3	7	—	36	—	7	—	2	—	28	—	3	—
2	—	—	5	—	—	—	—	—	7	6	22	—	2	—	9	1	17	—	3	—	24	—	4	—	2	—	31	—	1	—
3	2	—	4	—	2	—	3	1	4	4	12	3	4	—	4	—	17	—	10	—	19	—	5	—	7	—	31	—	4	—
4	2	—	1	—	—	—	—	—	5	3	11	1	3	—	3	—	13	—	5	—	10	1	5	1	5	—	14	—	1	—
Under 5	4	—	22	1	3	—	3	1	38	27	75	9	14	—	37	1	81	4	27	—	110	2	29	3	17	—	118	—	11	—
5–9	12	—	10	—	—	—	3	—	30	26	34	1	14	—	12	1	48	3	42	—	45	—	22	—	19	—	37	—	9	—
10–14	6	—	4	—	1	—	1	—	9	7	41	2	14	—	11	—	25	—	28	—	39	—	7	—	12	—	27	—	5	—
15–19	1	—	3	—	—	—	—	—	16	13	26	—	7	—	7	—	22	2	11	—	13	—	6	2	9	—	9	—	2	—
20–29	3	—	4	1	2	—	2	—	22	16	33	3	6	—	8	—	14	—	18	—	17	1	7	—	7	—	13	—	1	—
30–	1	—	6	1	—	—	3	2	19	13	32	8	3	—	7	1	31	1	8	—	20	—	13	—	4	—	12	—	3	1
All Ages	27	—	49	3	6	—	12	3	134	102	241	23	58	—	82	3	221	10	134	—	244	3	84	5	68	—	216	1	31	1

Age in Years	Stay 40–49 Days						Stay 50–74 Days						Stay 75–98 Days						Stay 99 or more Days					
	Poliomyelitis				Not Polio-myelitis		Poliomyelitis				Not Polio-myelitis		Poliomyelitis				Not Polio-myelitis		Poliomyelitis				Not Polio-myelitis	
	Without Paralysis		With Paralysis				Without Paralysis		With Paralysis				Without Paralysis		With Paralysis				Without Paralysis		With Paralysis			
	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.	C.	D.
Under 1	1	1	9	—	3	—	—	—	9	—	—	—	—	—	2	—	—	—	—	—	8	—	—	—
1	1	—	17	—	—	—	1	—	15	1	1	—	—	—	14	—	—	—	—	—	14	—	—	—
2	4	—	14	1	1	—	1	—	9	1	—	—	—	—	6	—	—	—	—	—	7	—	—	—
3	—	—	13	—	—	—	3	—	7	—	2	—	—	—	4	—	—	—	—	—	11	—	1	—
4	1	—	10	—	—	—	—	—	8	—	—	—	—	—	1	—	1	—	—	—	2	—	—	—
Under 5	7	1	63	1	4	—	5	—	48	2	3	—	—	—	27	—	1	—	—	—	42	—	1	—
5–9	6	—	27	—	4	—	3	—	19	—	2	1	—	—	4	—	1	—	—	—	6	—	—	—
10–14	4	—	16	—	3	—	—	—	7	—	8	—	—	—	2	1	1	—	—	—	7	—	1	—
15–19	1	—	10	—	1	—	—	—	8	—	4	—	—	—	1	—	—	—	—	—	2	—	—	—
20–29	2	—	3	—	2	—	1	—	6	—	—	—	—	—	3	1	1	—	—	—	8	—	—	—
30–	1	—	5	—	1	—	—	—	4	—	4	—	—	—	1	—	1	—	—	—	3	1	—	—
All Ages	21	1	124	1	15	—	9	—	92	2	21	1	—	—	38	2	5	—	—	—	68	1	2	—

C.—Cases. D.—Deaths.

TABLE 22A

Percentage distributions of durations of stay in hospital (cases not admitted to hospital excluded)

Age in Years	Poliomyelitis without Paralysis									Poliomyelitis with Paralysis									Not Poliomyelitis								
	Duration of Stay in Completed Days									Duration of Stay in Completed Days									Duration of Stay in Completed Days								
	–10	10–19	20–29	30–39	40–49	50–74	75–98	99–	Total	–10	10–19	20–29	30–39	40–49	50–74	75–98	99–	Total	–10	10–19	20–29	30–39	40–49	50–74	75–98	99–	Total
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Under 1	—	(20)	(40)	(20)	(20)	—	—	—	100	10·1	10·1	26·6	17·7	11·4	11·4	2·5	10·1	100	28·9	36·8	21·1	5·3	7·9	—	—	—	100
1	—	27·0	47·0	13·0	7·0	7·0	—	—	100	9·3	8·6	23·8	18·5	11·3	9·9	9·3	9·3	100	38·0	40·0	14·0	6·0	—	2·0	—	—	100
2	—	17·0	25·0	17·0	33·0	8·0	—	—	100	6·5	8·4	22·4	29·0	13·1	8·4	5·6	6·5	100	48·9	37·8	8·9	2·2	2·2	—	—	—	100
3	11·1	14·8	37·0	25·9	—	11·1	—	—	100	4·3	4·3	20·4	33·3	14·0	7·5	4·3	11·8	100	29·3	41·5	12·2	9·8	—	4·9	—	2·4	100
4	—	21·0	36·0	36·0	7·0	—	—	—	100	9·4	5·7	18·9	26·4	18·9	15·1	1·9	3·8	100	35·5	41·9	16·1	3·2	—	—	3·2	—	100
Under 5	4·1	19·2	37·0	23·3	9·6	6·8	—	—	100	7·9	7·7	22·8	24·4	13·0	9·9	5·6	8·7	100	36·6	39·5	14·1	5·4	2·0	1·5	0·5	0·5	100
5–9	3·4	16·1	48·3	21·8	6·9	3·4	—	—	100	16·7	6·7	25·0	20·6	15·0	10·6	2·2	3·3	100	28·3	40·0	18·3	7·5	3·3	1·7	0·8	—	100
10–14	1·7	23·7	47·5	20·3	6·8	—	—	—	100	7·6	9·3	33·1	22·9	13·6	5·9	1·7	5·9	100	45·1	27·5	7·7	5·5	3·3	8·8	1·1	1·1	100
15–19	—	25·0	39·3	32·1	3·6	—	—	—	100	24·2	10·6	19·7	13·6	15·2	12·1	1·5	3·0	100	42·6	36·1	9·8	3·3	1·6	6·6	—	—	100
20–29	5·6	16·7	50·0	19·4	5·6	2·8	—	—	100	27·5	10·0	21·2	16·2	3·7	7·5	3·7	10·0	100	56·9	24·1	12·1	1·7	3·4	—	1·7	—	100
30–	16·0	16·0	42·0	21·0	5·0	—	—	—	100	26·8	9·9	28·2	16·9	7·0	5·6	1·4	4·2	100	37·6	36·5	15·3	3·5	1·2	4·7	1·2	—	100
All Ages	4·0	19·2	44·4	22·5	7·0	3·0	—	—	100	13·4	8·2	24·4	21·6	12·4	9·2	3·8	6·8	100	38·9	35·6	13·5	5·0	2·4	3·4	0·8	0·3	100

TABLE 22B

Percentage distributions of recoveries by duration of stay in hospital

Ages in Years	Poliomyelitis with Paralysis									Not Poliomyelitis								
	–10	10–19	20–29	30–39	40–49	50–74	75–98	99–	Total	–10	16–19	20–29	30–39	40–49	50–74	75–98	99–	Total
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
Under 5	2·4	8·0	24·0	26·2	13·8	10·2	6·0	9·3	100	34·9	40·7	13·8	5·8	2·1	1·6	0·5	0·5	100
5–9	2·6	7·2	29·4	24·2	17·6	12·4	2·6	3·9	100	28·7	39·1	19·1	7·8	3·5	0·9	0·9	—	100
10–14	1·8	10·0	35·5	24·5	14·5	6·4	0·9	6·4	100	43·8	28·1	7·9	5·6	3·4	9·0	1·1	1·1	100
15–19	5·7	13·2	24·5	17·0	18·9	15·1	1·9	3·8	100	45·6	35·1	7·0	3·5	1·8	7·0	—	—	100
20–29	9·7	12·9	25·8	21·0	4·8	9·7	3·2	12·9	100	54·5	25·5	12·7	1·8	3·6	—	1·8	—	100
30–	10·9	10·9	36·4	20·0	9·1	7·3	1·8	3·6	100	32·0	40·0	17·3	2·7	1·3	5·3	1·3	—	100
Ali Ages	3·6	8·9	27·3	24·3	13·9	10·2	4·1	7·6	100	37·6	36·4	13·6	5·2	2·6	3·4	0·9	0·3	100

TABLE 23

Deaths under ten days in hospital, by duration of stay in I.D. hospital

Age in Years	Under 1 Day			1 Day			2 Days			3 Days			4 Days			5–9 Days		
	Polio.		Not Polio.	Polio.		Not Polio.	Polio.		Not Polio.	Polio.		Not Polio.	Polio.		Not Polio.	Polio.		Not Polio.
	P −	P +		P −	P +		P −	P +		P −	P +		P −	P +		P −	P +	
Under 1	—	—	—	—	4	1	—	—	—	—	2	1	—	—	—	—	—	—
1	—	—	—	—	3	—	—	1	—	—	2	—	—	1	1	—	1	2
2	—	—	—	—	1	—	—	4	—	—	—	—	—	—	—	—	1	—
3	1	1	—	—	2	—	—	1	1	—	—	—	—	—	1	—	—	1
4	—	1	1	—	—	—	—	1	—	—	1	—	—	—	—	—	—	—
Under 5	1	2	1	—	10	1	—	7	1	—	5	1	—	1	2	—	2	3
5–9	—	3	—	—	9	—	—	6	—	—	2	1	—	3	—	—	3	—
10–14	—	1	—	—	3	1	—	1	—	—	—	—	—	—	—	—	2	1
15–19	—	4	—	—	5	—	—	1	—	—	1	—	—	—	—	—	2	—
20–29	—	2	—	—	1	—	—	7	—	—	4	—	—	1	—	—	1	3
30–	1	3	3	—	4	1	—	2	1	—	2	1	—	1	—	1	1	2
All Ages	2	15	4	—	32	3	—	24	2	—	14	3	—	6	2	1	11	9

P − : Without paralysis. P+ : With paraiysis.

TABLE 24

Poliomyelitis notifications subdivided by degree of paralysis at maximum. (Only cases accepted as poliomyelitis with Paralysis.)

Age in Years	Slight		Moderate		Severe		Unstated		Totals	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Under 1 ...	18	—	36	—	34	8	—	—	85	8
1 ...	42	—	57	1	58	8	—	—	157	9
2 ...	28	—	50	1	34	8	—	—	112	9
3 ...	29	—	37	—	31	4	—	—	97	4
4 ...	16	—	17	—	20	3	1	1	54	4
Under 5 ...	133	—	197	2	174	31	1	1	505	34
5–9 ...	47	—	67	1	75	26	1	—	190	27
10–14 ...	33	—	47	—	42	7	—	—	122	8
15–19 ...	9	—	19	—	41	13	—	—	69	13
20–29 ...	12	—	21	—	51	19	—	—	84	19
30– ...	17	—	23	—	37	17	—	—	77	17
All Ages ...	251	—	374	4	420	113	2	1	1,047	118

TABLE 25

Poliomyelitis notifications subdivided by degree of paralysis on leaving I.D. Hospital. (Only surviving cases accepted as poliomyelitis with paralysis.)

Age in Years	Cases: None	Slight	Moderate	Severe	Total
Under 1 ...	16	25	20	17 *	78 *
1 ...	19	58	41	30	148
2 ...	11	46	31	15	103
3 ...	21	27	33	12	93
4 ...	11	20	10	9	50
Under 5 ...	78	176	135	83 *	472 *
5–9 ...	31	62	37	33	163
10–14 ...	22	41	27	24	114
15–19 ...	11	10	16	19	56
20–29 ...	10	17	16	22	65
30– ...	17	16	16	11	60
All Ages ...	169	322	247	192 *	930 *

* These figures include one patient who died after discharge from I.D. Hospital.

TABLE 26

Poliomyelitis notifications subdivided by location of lesion at maximum. (Only cases accepted as poliomyelitis with paralysis)

Age in Years	Cerebral only		Bulbar only		Upper Cervical only		Lower Cervical only		Thoracic only		Lumbar or Sacral		Totals, single entries	
	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.
Under 1	1	—	6	—	3	—	17	—	—	—	27	—	54	—
1	5	1	14	1	3	—	24	1	—	—	62	—	108	3
2	5	—	12	3	2	—	7	—	1	—	54	1	81	4
3	6	3	12	1	1	—	8	—	2	—	35	—	64	4
4	1	—	6	—	—	—	3	—	3	—	23	—	36	—
Under 5	18	4	50	5	9	—	59	1	6	—	201	1	343	11
5–9	4	1	35	12	3	—	16	—	3	1	58	—	199	14
10–14	6	—	11	3	3	—	17	—	—	—	35	1	72	4
15–19	2	—	5	3	2	—	6	—	—	—	19	—	34	3
20–24	2	—	9	5	1	—	11	—	1	—	18	—	42	5
30–	1	—	11	2	1	—	4	—	—	—	20	—	37	2
All Ages	33	5	121	30	19	—	113	1	10	1	351	2	647	39
F.R. %	15•2		24•8		—		0•9		(10)		0•6		6•0	

Age in Years	Cerebral plus others		Bulbar plus others		Upper Cervical + others		Lower Cervical + others		Thoracic plus others		Lumbar or Sacral + others		Totals,* multiple entries		Location unstated	
	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.	Cases	D.
Under 1	1	1	13	5	11	7	22	7	12	6	26	7	31	8	—	—
1	4	2	13	4	13	3	30	4	23	1	43	4	49	6	—	—
2	2	1	12	4	5	3	20	5	20	3	30	5	31	5	—	—
3	—	—	10	—	10	—	21	—	20	—	28	—	33	—	—	—
4	4	2	7	3	6	2	8	2	10	2	10	2	17	3	1	1
Under 5	11	6	55	16	45	15	101	18	85	12	137	18	161	22	1	1
5–9	9	5	28	10	30	11	41	5	40	7	49	3	71	13	—	—
10–14	5	2	15	3	13	2	34	1	25	1	41	1	50	4	—	—
15–19	5	3	15	9	13	7	23	6	23	7	30	7	35	10	—	—
20–29	2	2	17	9	20	8	36	13	27	8	34	10	42	14	—	—
30–	7	4	9	4	14	9	27	11	24	11	33	12	40	15	—	—
All Ages	39	22	139	51	135	52	262	54	224	46	324	51	399	78	1	1
F.R. %	56•4		36•7		38•5		20•6		20•5		15•7		19•6			

*Total cases, not total entries. F.R.—Fatality rate. D.—Deaths.

TABLE 27

Poliomyelitis notifications subdivided by location of lesion on leaving infectious diseases hospital. (Only surviving cases accepted as poliomyelitis with paralysis)

Age in Years	Cerebral only	Bulbar only	Upper Cervical only	Lower Cervical only	Thoracic only	Lumbar or Sacral only	Totals, single entries	
	Cases	Cases	Cases	Cases	Cases	Cases	Cases	
Under 1	1	7	2	16	—	26	52	
1	4	8	4	21	—	68	105	
2	4	10	2	8	1	53	78	
3	2	9	2	11	2	30	56	
4	1	4	—	5	—	24	34	
Under 5	12	38	10	61	3	201	325	
5–9	3	24	4	15	2	53	101	
10–14	3	7	3	17	—	32	62	
15–19	1	2	2	5	—	15	25	
20–29	1	2	1	13	1	19	37	
30–	2	4	1	3	—	15	25	
All Ages	22	77	21	114	6	335	575	

Age in Years	Cerebral plus others	Bulbar plus others	Upper Cervical + others	Lower Cervical + others	Thoracic plus others	Lumbar or Sacral + others	Totals,* multiple entries	No Paralysis
	Cases	Cases	Cases	Cases	Cases	Cases	Cases	Cases
Under 1	—	—	1	8	3	10	10	16
1	—	2	5	19	13	22	24	19
2	—	4	1	9	9	14	14	11
3	—	3	4	8	8	13	16	21
4	—	2	2	1	3	2	5	11
Under 5	—	11	13	45	36	61	69	78
5–9	1	3	10	20	23	29	31	31
10–14	—	4	8	21	17	28	30	22
15–19	—	3	6	13	12	19	20	11
20–29	—	1	5	15	13	17	18	10
30–	—	1	5	11	11	16	18	17
All Ages	1	23	47	125	112	170	186	169

*Total cases, not total entries.

TABLE 28

Poliomyelitis notifications subdivided by probable duration of orthopædic treatment after leaving I.D. hospital. (Only surviving cases accepted as poliomyelitis.)

Age in Years	Weeks	Probable Duration		Total
		Months	Unstated	
Under 1	5	42	30	77
1	19	93	36	148
2	10	60	33	103
3	13	47	33	93
4	6	26	18	50
Under 5	53	268	150	471
5–9	10	87	66	163
10–14	11	60	43	114
15–19	2	33	21	56
20–29	4	35	26	65
30–	7	27	26	60
All Ages	87	510	332	929

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